GLENWOOD CONTAINER SITE

WESTCHESTER COUNTY

CITY OF YONKERS, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: C360154

Prepared for:

Fondak Enterprises, LLC, Mures Alexander LLC & Alexander 72G, LLC

214 Starr Street

Brooklyn, New York 11237

Prepared by:

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GZA File No. 12.0077558.00

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

AUGUST 2025

CERTIFICATION STATEMENT

I, Robert Jackson, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

ROBERT L. JACKSON P.E.

AUGUST 12, 2025 DATE

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List of Acronyms

AGV	Air Guideline Values
AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
GHG	Greenhouse Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
P.E. or PE	Professional Engineer
PFAS	Per- and Polyfluoroalkyl Substances
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision

RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD	Sub-slab Depressurization
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

ES EXECUTIVE SUMMARY

The following provides a summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan (SMP):

Site Identification:	Site No. C360154, 72 Alexander Street, City of Yonkers, Westchester County, New York

Institutional Controls:	1. The property may be used for restricted residential, commercial or industrial purposes consistent with zoning; use of the groundwater is prohibited.	
	2. An Environmental Easement was filed and accepted on September 26, 2024 through the Department of Environmental Conservation It was recorded with the Westchester County Clerk on 10/31/2024..	
	3. All ECs must be inspected at a frequency and in a manner defined in the SMP.	
Engineering Controls:	1. Cover system	
	2. Sub Slab Depressurization System (SSDS)	
Inspections:		Frequency
1. Cover inspection		Annually
2. SSDS		Annually
Monitoring:		
1. SSDS effluent		Annually
Maintenance:		
1. Active SSDS Maintenance		Monthly
Reporting:		
1. Periodic Review Report		Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this SMP.

1.0 INTRODUCTION

1.1 General

This Site Management Plan ("SMP") was prepared to manage remaining contamination at the site until Environmental Easement is extinguished for the Glenwood Container Site located in City of Yonkers, New York (hereinafter referred to as the "Site"). **Figure 1** is a site location map. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), Site No. C360154, which is administered by New York State Department of Environmental Conservation (NYSDEC).

Fondak Enterprises, LLC ("Fondak"), entered into a Brownfield Cleanup Agreement ("BCA") the BCP on November 1, 2016, with the NYSDEC to remediate the site. An initial BCA Amendment was approved by NYSDEC on May 1, 2018, after additional data was submitted to prove that contamination was present on the Site that needed remediation, and the Volunteer was eligible for the tangible property tax credits.

Subsequently, a second BCA Amendment was approved by NYSDEC on March 7, 2023, which stated that Mures Alexander, LLC was a prospective purchasers of the site and that Fondak would remain a party to the BCA. A third BCA Amendment was approved by NYSDEC on July 18, 2023, which stated that the site would be purchased by both Mures Alexander, LLC and a family affiliate Alexander 72G, LLC. A fourth BCA Amendment was approved on September 20, 2024, which states that Volunteers Mures Alexander, LLC and Alexander 72G, LLC are now the title owners of the BCP Site as tenants-in-common. Collectively, the Volunteers are Fondak, Mures Alexander, LLC and Alexander 72G, LLC (hereinafter "Volunteers"). **Figure 2** shows the site location and boundaries of the property. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in **Appendix A**.

After completion of the remedial work residual contamination has been left at this site, which is hereafter referred to as "remaining contamination".

Institutional Controls (ICs) and Engineering Controls (ECs) have been incorporated into the site remedy to minimize exposure to the remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted by the NYSDEC, and recorded with the Westchester County Clerk, requires compliance with this SMP and all ECs and ICs placed on the site.

This SMP was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This SMP has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC); and
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 and the BCA (Index # C360154-07-16, Site # C360154) for the site, and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in **Appendix B** of this SMP.

This SMP was prepared by Equity Environmental Engineering, LLC, which was subsequently purchased and became a Division of Goldberg-Zoino Associates GeoEnvironmental, Engineering and Geology of NY, D.P.C. d/b/a GZA GeoEnvironmental of New York (GZA)), on behalf of the Volunteers, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This

SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the site.

1.2 Revisions and Alterations

Revisions and alterations to this plan must be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. All approved alterations must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations. For example, any changes to as-built drawings must be stamped by a New York State Professional Engineer. In accordance with the Environmental Easement for the site, the NYSDEC project manager will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

1. 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA, 6 NYCRR Part 375 and/or Environmental Conservation Law.
2. 7-day advance notice of any field activity associated with the remedial program.
3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above-mentioned 60-day advance notice is also required.
4. Notice within 48 hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

5. Notice within 48 hours of any non-routine maintenance activities.

6. Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

7. Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

8. At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the BCA, and all approved work plans and reports, including this SMP.

9. Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in **Appendix B.**

Table 1: Notifications*

Name	**Contact Information**	**Required Notification****
NYSDEC Project Manager: Michaela Cochran	518-402-9669 Michaela.Cochran@dec.ny.gov	All Notifications
NYSDEC DER Project Manager's Supervisor: Mr. Amen Omorogbe	(518) 402-9801 amen.omorogbe@dec.ny.gov	All Notifications

Name	**Contact Information**	**Required Notification****
NYSDEC Site Control: Ms. Kelly Lewandowski:	(518) 402-9569 kelly.lewandowski@dec.ny.gov	Notifications 1 and 8
NYSDOH Project Manager: Ms. Sarita Wagh	(518) 402-7860 sarita.wagh@health.ny.gov	Notifications 4, 6, and 7

* Note: Notifications are subject to change and will be updated, as necessary.

** Note: Numbers in this column reference the numbered bullets in the notification list in this section.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The site is located in Yonkers, Westchester County, New York and is identified as Section 2 Block 2608 and Lot 25 on the Westchester Tax Map (see **Figure 1** and **Figure 2**). The site is an approximately 0.4-acre area and is bounded by the PolyChrome Manufacturing Brownfield Cleanup Program site (NYSDEC BCP Number C360098, the site has documented historical impacts to soil, groundwater and soil, vapor) to the north, the Former Patclin Chemical Company to the south, Metro North Hudson Line Railroad right-of-way to the east, and Former Altman Lighting to the west (see **Figure 2**– Site Layout Map). The boundaries of the site are more fully described in **Appendix A– Environmental Easement.** The owners of the site parcel at the time of issuance of this SMP is Mures Alexander LLC and Alexander 72G, LLC, 214 Starr Street, Brooklyn, New York 11237. The owners are also the operators of the Site at the time of issuance of this SMP. The Site is currently being used to store finished products by Starr Windows & Doors located next door at 62 Alexander Street, Yonkers, New York 10701.

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: a pre-existing commercial building, asphalt pavement, and undeveloped land. The Site is zoned industrial/commercial and is currently an industrial warehouse.

The properties adjoining the Site and, in the neighborhood, surrounding the Site primarily include residential and industrial properties. The properties immediately south of the Site are industrial; the properties immediately north of the Site include a residential building; the property immediately east of the Site is the Metro North Hudson Line

Railroad right-of-way and multiple tracks; and the properties to the west of the Site include residential and the Hudson River.

2.2.2 Geology

In accordance with the United States Department of Agriculture Web Soil Survey Service, the dominant soil composition in the general vicinity of the Site is Urban Fill (Uf) which consists of 70 percent or more coverage with asphalt, concrete or other impervious building material.

The surrounding area is underlain by bedrock consisting of a stratified sequence: Paleozoic, Ordovician and Lower Ordovician and Cambrian carbonate rocks. No bedrock outcrops have been observed by Paulus, Sokolowski and Sartor Engineering, PC (PS&S) at the Site. Depth to bedrock at the Site is not known, however, bedrock has been observed at depths greater than 80 feet at the adjacent Polychrome East Site.

Fill materials were observed across the entire Site to 20 feet below ground surface (bgs). The fill material is underlain by native Hudson River sediments, a clay confining layer. Durning the GZA investigation and remediation activities fill material was observed onsite to depths of 10 feet bgs. Soils observed were poorly graded sand with large gravel and little to no fines.

Site specific boring logs from PS&S investigation (September 2017) and GZA emerging contaminates investigation (April 2023) are provided in **Appendix C and Appendix D,** respectively.

2.2.3 Hydrogeology

Information on the Site topography was obtained from the United States Geological Survey (USGS) Topographic Map of the City of Yonkers, New York Quadrangle (refer to **Figure 1**). The Site is approximately 450 feet east of the Hudson River and located in a relatively flat area, with a surface elevation of approximately 7-feet above mean sea level (msl). Groundwater was encountered at approximately 7-feet bgs during the PS&S Remedial Investigation (RI) and 7 - 8.4-feet bgs during the GZA emerging contaminants

investigation. The regional groundwater flow is from east to west, towards the Hudson River.

A groundwater contour map is shown in **Figure 3**. Groundwater monitoring well construction logs are provided in **Appendix C and D**. All groundwater monitoring for the Site were completed in temporary monitoring wells.

2.3 Investigation and Remedial History

Prior to 1886 the Site location was part of the Hudson River. Sometime between 1886 and 1898 the Hudson River was filled to create the Site's current location and surrounding upland areas to the north, south, and west. The Site remained vacant until sometime between 1917 and 1942. The Site was initially developed with one centrally located building and several smaller buildings to the east. From 1951 through 2004, the Site is identified as, "Flour and Gro. Warehouse". An auto garage was also present on the Site from 1951 through 1957. Per the City Directory Abstract, the Site was identified as "Universal Glenwood Packaging" from 1971 through 2001. It was also identified as "Glenwood Container" between 1982 and 2001. The Site was vacant from approximately 2001 until recently when it has started to be used as a warehouse facility.

The following narrative provides a remedial history timeline and a summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in **Section 8.0 - References**.

- Phase I Environmental Site Assessment (ESA) - PS&S (conducted in July 2011 and reported in September 2012);
- Limited Phase II Environmental Site Investigation (ESI) - PS&S (conducted in July 2011 and reported in September 2011);
- Interim Remedial Measures (IRM) and Remedial Investigation Report - PS&S (September 2017)
- Perimeter Soil Vapor and Emergent Contaminant Sampling – GZA (April 2023)
- Site Remedial Action – GZA (September 2023)

2.3.1 2011 PS&S Phase I ESA and Phase II ESI

PS&S performed a Phase I ESA and Phase II ESI at the Site in 2011. During the 2011 Phase I ESA, the following five Site RECs were identified:

REC-1: Two UST fill ports and a vent pipe were observed at the Site and thus the 2011 Phase I ESA indicated that two underground storage tanks (USTs) may be present on the western part of the Site in the building loading dock area.

REC-2: Since the building was constructed prior to 1978, it is suspected that the building may contain Lead Based Paint (LBP).

REC-3: Since the building was constructed prior to 1978, it is suspected that the building may contain Asbestos Containing Building Material (ACBM);

REC-4: Fluorescent light ballasts were observed at the Site and since the building was constructed prior to 1979, it is likely that some of the fluorescent light ballasts that are in place contain Polychlorinated biphenyls (PCBs); and,

REC-5: The Site's history documents previous usage as an auto repair shop; it was suspected that the presence of petroleum may exist below grade at the Site.

While not noted in the 2011 Phase I ESA, historic fill has also been considered a REC for the other brownfield sites along Alexander Street.

A Phase II ESI was completed to further investigate soil, soil vapor, and groundwater impacts related to the suspected RECs identified above and historic fill materials present. Analytical data from the 2011 Phase II ESI indicated that the historical on-site auto repair shop may have impacted Site soil, groundwater, and soil vapor. Impacts observed during the 2011 Phase II ESI may also be related to the historical fill used to raise the grade of the Site and surrounding Alexander Street area above the Hudson River.

2.3.2 2017 Interim Remedial Measures (IRM)

In September 2017, the IRM identified on-site USTs were removed and closed. Appropriate permits were obtained from the City of Yonkers and Westchester Department

of Health. Records of the UST removal IRM are provided in Appendix B of RIR. The USTs were removed in accordance with City of Yonkers Department of Housing and Buildings, Westchester County Department of Health, and NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation.

No visual or olfactory signs of contamination were observed in the excavated materials. Excavated materials were also screened using a Photoionization Detector (PID) and no elevated readings were observed. In accordance with DER-10, post excavation samples were obtained from the excavation. Samples were collected from the bottom of excavation (UST-A) and four sidewalls (UST-B through UST-E). The results of the post excavation soil sample analyses reported SVOC exceedances above Restricted Residential Use (RR) Soil Cleanup Objectives (SCOs) in the five of the samples obtained and Metals exceedances above RRSCOs in four of the five samples obtained. Excavated materials were used to backfill the excavation. The top two feet of the excavation were backfilled using imported stone that complied with DER-10 5.4(e)5.

2.3.3 2017 Remedial Investigation

The September 2017 RI activities were conducted in accordance with the RIWP for the Site, dated July 20, 2017, and as updated by PS&S' Response to NYSDEC Comments, dated July 26, 2017, the NYSDEC Conditional Approval Letter of the RIWP with Modifications dated August 16, 2017, and the September 2017 NYSDEC-approved email Field Change Requests (FCRs). RI activities at the Site included the collection of soil samples, soil vapor samples, and groundwater samples obtained from soil borings, soil vapor probes, and temporary groundwater monitoring wells. The collection of these RI samples was performed to:

1) Characterize the nature and extent of contamination at the Site; and

2) Provide sufficient data to support the development of a remediation strategy for the Site.

2.3.3.1 2017 Soil Investigation

In September 2017, PS&S performed RI activities to investigate the nature and extent of impacts related to subsurface fill materials at the Site. Fill materials were observed on-site to depths of 15 to 20 feet bgs which overlie the native Hudson River sediments. Using direct push continuous sampling drilling methods, seven soil borings (SB-GP-14 through SB-GP-16 and MW-GP-4 through MW-GP-7) were advanced at the locations identified on **Figures A and 4B** to 20 feet bgs.

Seven soil samples (SB-GP-14 through SB-GP-16 and MW-GP-4 through MW-GP-7) were collected at depths ranging from 3 to 19 feet bgs. The soil recovered in each sample was "field-screened" with a PID for the presence of organic vapors. Soil samples were visually classified in the field and this information, along with other pertinent observations (i.e., PID readings, visual/physical observations) were recorded in boring logs maintained by the PS&S field representative. The soils were classified using the Unified Soil Classification System (USCS). A total of seven soil samples (one per soil boring) were collected at the soil interval exhibiting the greatest indications of contamination based on field screening, olfactory and visual observations (e.g., staining, sheen, odor, etc.). Soil boring logs are provided as **Appendix C**.

The seven soil samples were analyzed for the presence of Target Compound List (TCL) Volatile Organic Compounds (VOC), TCL Semi-volatile Organic Compounds (SVOC), Target Analyte List (TAL) Metals, Pesticides, Herbicides and PCBs. Reported soil concentrations were compared to the RRSCOs.

In summary, the 2017 RI, subsurface soil sample results confirmed that on-site fill material contains various VOCs, SVOCs and Metals exceedances above the RRSCOs.

- ***VOCs***: MW-GP-6, one of the seven soil samples analyzed, reported VOCs that exceeded the RRSCOs.
    - Benzene was detected and exceeded the RRSCO standard (4.8 mg/kg) with a concentration of 180 mg/kg.

- Ethylbenzene was detected and exceeded the RRSCO standard (41 mg/kg) with a concentration of 200 mg/kg.
- Xylenes (total) were detected and exceeded the RRSCO standard (100 mg/kg) with a concentration of 290 mg/kg.

- ***SVOCs***: Five of the seven soil samples analyzed, MW-GP-4, MW-GP-5, MWGP-6, SB-GP-15, and SB-GP-16, reported SVOCs that exceeded the RRSCOs.
  - Benzo(a)anthracene was detected and exceeded the RRSCO standard (1 mg/kg) in four soil samples with the highest concentration of 34 mg/kg in Sample ID MWGP- 6.
  - Benzo(a)pyrene was detected and exceeded the RRSCO standard (1 mg/kg) in three soil samples with the highest concentration of 30 mg/kg in Sample ID MWGP-6.
  - Benzo(b)fluoranthene was detected and exceeded the RRSCO standard (1 mg/kg) in five soil samples with the highest concentration of 34 mg/kg in Sample ID MW-GP-6.
  - Benzo(k)fluoranthene was detected and exceeded the RRSCO standard (3.9 mg/kg) in one soil sample with a concentration of 5.7 mg/kg in Sample ID SB-GP-15.
  - Chrysene was detected and exceeded the RRSCO standard (3.9 mg/kg) in three soil samples with the highest concentration of 34 mg/kg in Sample ID MW-GP-6.
  - Dibenzo(a,h)anthracene was detected and exceeded the RRSCO standard (0.33 mg/kg) in one soil sample with a concentration of 1.2 mg/kg in Sample ID MWGP-4.
  - Indeno1,2,3-cdpyrene was detected and exceeded the RRSCO standard (0.5 mg/kg) in four soil samples with the highest concentration of 11 mg/kg in Sample ID SB-GP-15.
  - Naphthalene was detected and exceeded the RRSCO standard (100 mg/kg) in two soil samples with the highest concentration of 1600 mg/kg in Sample ID MWGP-6.

- Phenanthrene was detected and exceeded the RRSCO standard (100 mg/kg) in two soil samples with the highest concentration of 190 mg/kg in Sample ID MWGP- 6.
- Pyrene was detected and exceeded the RRSCO standard (100 mg/kg) in one soil sample with a concentration of 130 mg/kg in Sample ID MW-GP-6.

- ***Metals:*** Six of the seven soil samples analyzed, specifically SB-GP-14, SB-GP-15, SBGP-16, MW-GP-4, MW-GP-6, and MW-GP-7, reported Metals that exceeded the RRSCOs.
  - Arsenic was detected and exceeded the RRSCO (16 mg/kg) in one soil sample with a concentration of 20 mg/kg at in Sample ID MW-GP-6.
  - Barium was detected and exceeded the RRSCO (400 mg/kg) in one soil sample with a concentration of 1100 mg/kg at in Sample ID SB-GP-16.
  - Copper was detected and exceeded the RRSCO (270 mg/kg) in three soil samples with the highest concentration of 1,400 mg/kg in Sample ID MW-GP-6.
  - Lead was detected and exceeded the RRSCO (400 mg/kg) in three soil samples with the highest concentration of 3,000 mg/kg in Sample ID SB-GP-16.
  - Mercury was detected and exceeded the RRSCO (0.81 mg/kg) in five soil samples with the highest concentration of 310 mg/kg at in Sample ID SB-GP-15.

- ***Pesticides/PCBs:*** No pesticides or PCBs were detected above the RRSCOs.

2.3.3.2 2017 RI Sewer Debris

During a Site walkthrough in March 2017, a steel plate was observed in the eastern outdoor area of the Site. In September 2017, this plate was removed, and no sewer drain, or similar subsurface drain piping system was observed; therefore, no sewer debris sample was collected from this location (as proposed in the Remedial Investigation Work Plan (RIWP), dated July 20, 2017. The two sewer drains observed in the interior loading dock area, proposed in the RIWP to be removed during IRMs, were approved by NYSDEC (on

September 13, 2017, via email) to remain in place as they appeared to be connected to the existing storm sewer system. Sewer debris from the two sewer drains (previously sampled as part of the Phase II ESI in 2011) were resampled in September 2017 as part of RI activities.

A total of two sewer debris samples (one per sewer drain) were collected from 0 to 6 inches below the sewer debris surface. The sewer debris recovered in each sample was "field screened". The two sewer debris samples were analyzed for the presence of TCL VOC, TCL SVOC, TAL Metals, Pesticides, Herbicides, and PCBs. Reported soil concentrations were compared to RRSCOs.

In summary, the 2017 RI sewer debris sample results confirmed that sewer debris at the Site contains various SVOCs, Metals, and PCB exceedances above the RRSCOs.

- ***VOCs:*** No VOCs were detected above the RRSCOs.

- ***SVOCs***: Both sewer debris samples analyzed reported SVOCs that exceeded the RRSCOs.
  - Benzo(a)anthracene was detected and exceeded the RRSCO standard (1 mg/kg) in both sewer debris samples with the highest concentration of 10 mg/kg in Sample ID SD-2.
  - Benzo(a)pyrene was detected and exceeded the RRSCO standard (1 mg/kg) in both sewer debris samples with the highest concentration of 8.1 mg/kg in Sample ID SD-1.
  - Benzo(b)fluoranthene was detected and exceeded the RRSCO standard (1 mg/kg) in both sewer debris samples with the highest concentration of 11 mg/kg in Sample ID SD-1.
  - Chrysene was detected and exceeded the RRSCO standard (3.9 mg/kg) in both sewer debris samples with the highest concentration of 10 mg/kg in Sample ID SD-2.

- Dibenzo(a,h)anthracene was detected and exceeded the RRSCO standard (0.33 mg/kg) in one sewer debris sample with a concentration of 2.0 mg/kg in Sample ID SD-1.
- Indeno (1,2,3-cd) pyrene was detected and exceeded the RRSCO standard (0.5 mg/kg) in both sewer debris samples with the highest concentration of 5.9 mg/kg in Sample ID SD-1.

- ***Metals:*** Both sewer debris samples analyzed reported Metals that exceeded the RRSCOs.
  - Arsenic was detected and exceeded the RRSCO (16 mg/kg) in both sewer debris samples with the highest concentration of 29 mg/kg at in Sample ID SD-2.
  - Barium was detected and exceeded the RRSCO (400 mg/kg) in both sewer debris samples with the highest concentration of 610 mg/kg at in Sample ID SD-2.
  - Cadmium was detected and exceeded the RRSCO (4.3 mg/kg) in both sewer debris samples with the highest concentration of 3.4 mg/kg in Sample ID SD-2.
  - Copper was detected and exceeded the RRSCO (270 mg/kg) in both sewer debris samples with the highest concentration of 4,600 mg/kg in Sample ID SD-1.
  - Lead was detected and exceeded the RRSCO (400 mg/kg) in both sewer debris samples with the highest concentration of 24,000 mg/kg in Sample ID SD-1.
  - Mercury was detected and exceeded the RRSCO (0.81 mg/kg) in both sewer debris samples with the highest concentration of 5.1 mg/kg at in Sample ID SD-1.

- ***PCBs:*** Both sewer debris samples analyzed reported PCBs that exceeded the RRSCO (1 mg/kg) with the highest concentration of 98 mg/kg in Sample ID SD-2.

- ***Pesticides:*** No pesticides were detected above the RRSCOs.

2.3.3.3 2017 RI Surface Soil

The asphalt pavement in the eastern, outdoor area of the Site was observed to be covered on the surface of the pavement with soil (herein referred to as surface soils). These observed surface soils were sampled as part of RI activities to determine the nature and extent of contamination in them.

In September 2017, three surface soil samples (SURF-1 through SURF-3) were collected from 0 to 2 inches below the soil surface. Prior to sample collection, the eastern outdoor surface soil area was field-screened and no signs of visual or olfactory evidence of contamination were observed. One of the three surface soil samples were collected from surface soil observed beneath the steel plate that was removed during RI activities. This area is adjacent to the building's eastern garage door. The remaining two surface soil samples were collected from randomly selected locations to provide a representative spread of the eastern outdoor area surface soils. The eastern outdoor surface soil samples were field-screened and no signs of visual or olfactory evidence of contamination were observed. The three surface soil samples were analyzed for the presence of TCL VOC, TCL SVOC, TAL Metals, Pesticides, Herbicides, and PCBs. Reported soil concentrations were compared to RRSCOs (see **Table 2**)

In summary, the 2017 RI surface soil sample results confirmed that surface soils in the eastern outdoor area of the Site contain various SVOCs and Metals exceedances above the RRSCOs.

- ***VOCs:*** No VOCs were detected above the RRSCOs.

- ***SVOCs***: The three surface soil samples analyzed reported SVOCs that exceeded the RRSCOs.
  - Benzo(a)anthracene was detected and exceeded the RRSCO standard (1 mg/kg) in one surface soil sample with a concentration of 2 mg/kg in Sample ID SURF-2.

- Benzo(a)pyrene was detected and exceeded the RRSCO standard (1 mg/kg) in one surface soil sample with a concentration of 1.8 mg/kg in Sample ID SURF-2.
- Benzo(b)fluoranthene was detected and exceeded the RRSCO standard (1 mg/kg) in three surface soil samples with the highest concentration of 2.5 mg/kg in Sample ID SURF-2.
- Dibenzo(a,h)anthracene was detected and exceeded the RRSCO standard (0.33 mg/kg) in one surface soil sample with a concentration of 0.46 mg/kg in Sample ID SURF-2.
- Indeno(1,2,3-cd)pyrene was detected and exceeded the RRSCO standard (0.5 mg/kg) in three surface soil samples with the highest concentration of 1.3 mg/kg in Sample ID SURF-2.

- ***Metals:*** The three surface soil samples analyzed reported Metals that exceeded the RRSCOs.
  - Arsenic was detected and exceeded the RRSCO (16 mg/kg) in one surface soil sample with a concentration of 20 mg/kg at in Sample ID SURF-2.
  - Cadmium was detected and exceeded the RRSCO (4.3 mg/kg) in three surface soil samples with the highest concentration of 8.7 mg/kg in Sample ID SURF-1.
  - Copper was detected and exceeded the RRSCO (270 mg/kg) in one surface soil sample with a concentration of 630 mg/kg in Sample ID SURF-2.
  - Lead was detected and exceeded the RRSCO (400 mg/kg) in two surface soil samples with the highest concentration of 2,500 mg/kg in Sample ID SURF-2.
  - Mercury was detected and exceeded the RRSCO (0.81 mg/kg) in one surface soil sample with a concentration of 1.5 mg/kg at in Sample ID SURF-2.

- ***Pesticides/PCBs:*** No pesticides or PCBs were detected above the RRSCOs.

2.3.3.4 2017 Groundwater Remedial Investigation

In September 2017, four temporary groundwater monitoring wells (MW-GP-4 through MW-GP-7), constructed of 1-inch diameter slotted PVC, were installed to 10 feet bgs. The temporary wells were installed with a 10-foot length of slotted PVC screen and sand pack in the borehole in accordance with the NYSDEC regulatory requirements. Depth to groundwater ranged from 4.9 to 5.5 ft bgs (see **Figures 5A** and **5B**).

A total of four groundwater samples (one per temporary well) were collected within the screened interval at approximately eight feet bgs. The samples were analyzed for TCL VOC, TCL SVOC, and TAL Metals. Sample results are discussed below.

- ***VOCs:*** One of the four groundwater sample collected and analyzed, MW-GP- 4, contained Chloroform exceeded the AWQS GA (7 ug/l) with a concentration of 33 ug/l in Sample ID MW-GP-4.

- ***SVOCs:*** No SVOCs were detected above the NYSDEC AWQS GA.

- ***Metals*:** The four groundwater samples collected and analyzed, reported Metals that exceeded the NYSDEC AWQS GA.
    - Iron was detected and exceeded the AWQS GA (600 ug/l) in four samples with the highest concentration of 5,300 ug/l in Sample ID MW-GP-6.
    - Manganese was detected and exceeded the AWQS GA (300 ug/l) in one sample with a concentration of 930 ug/l in Sample ID MW-GP-6.

- **Pesticides/PCBs:** No pesticides or PCBs were detected above the NYSDEC AWQS GA.

2.4 2017 RI Soil Vapor Intrusion Assessment

In September 2017, a SVI assessment was performed at the Site. Three co-located soil vapor points, sub slab, and indoor air quality samples were collected at the Site. One ambient air sample (AA-1) was also collected for background analysis (see **Figure 6**).

The three soil vapor points (SV-GP-3 through SV-GP-5) were installed using a direct push probe down to a depth of approximately 4-feet bgs (into the vadose zone and 1-2 feet above the groundwater table). The three sub-slab samples (SS-3 through SS-5) were installed using a handheld rotary hammer drill to the depth immediately below the slab (1-2 inches below the slab). The three indoor air quality samples (IA-3 through IA-5) were collected approximately 5 feet above the slab within the open space building. The soil vapor, sub slab, and indoor air quality samples were collected concurrently. The SVI samples were analyzed by Alpha Analytical, a NYSDEC-ELAP certified laboratory, for the VOCs via EPA Method TO-15. Helium was used as a tracer for the leak tests that were performed at the sub slab and soil vapor locations.

Indoor air sample results were compared to NYSDOH Air Guideline Values (AGVs) and ambient air samples.. In addition, sub-slab soil vapor and indoor air results were compared to the applicable NYSDOH decision matrices.

The 2017 RI SVI assessment identified the following:

- Methylene chloride was reported as non-detect in the three soil vapor, sub-slab, and indoor air samples. Methylene chloride was detected in the ambient sample (AA-1) at 4.41 ug/m^3.
- Trichloroethene was not detected in the three soil vapor, sub-slab, and indoor air samples; and in the ambient air sample.
- Tetrachloroethene (PCE) was identified below the NYSDOH AVG of 30 ug/m^3 in the three indoor air samples (IA-3, IA-4, and IA-5) with reported concentrations ranging from 0.31 ug/m3 to 0.38 ug/m^3. PCE was also detected in the soil vapor sample (SV-GP-3) at 348 ug/m^3 and sub-slab sample (SS-3) at 321 ug/m^3. The results for the three sample locations would fall into the recommended category of “No further action” in accordance with NYSDOH Decision Matrix B.
- Carbon tetrachloride was detected in each indoor air sample ranging from 0.59 ug/m^3 to 0.61 ug/m^3; however, no detections of carbon

tetrachloride were reported within the respective soil vapor and sub-slab samples. Carbon tetrachloride was also reported in the ambient air sample at 0.528 ug/m^3. The results for the three sample locations would fall into the recommended category of "No further action" in accordance with NYSDOH Decision Matrix A.

- 1,1,1-trichloroethane was detected in the three soil vapor, sub-slab, and indoor air samples with a minimum concentration of 0.535 ug/m3 to a maximum concentration of 37,900 ug/m3. When comparing the results to the applicable NYSDOH Decision Matrix B, "Mitigate" would be the recommended action for GP-SV-4/SS-4/IA-4 and GPSV- 5/SS-5/IA-5 co-located sample locations. "No further action" was the recommended action for GP-SV-3/SS-3/IA-3 co-located sample location.

2.5 Perimeter Soil Vapor and Emergent Contaminant Sampling – April 2023

On April 18, 2023, GZA personnel and drilling contractor Environmental Phase II (EP2) conducted subsurface soil, soil vapor, and groundwater sampling at 72 Alexander Street, Yonkers, NY.

Pursuant to the NYSDEC requirements, GZA collected two onsite soil samples and two groundwater samples for emerging contaminant (PFAs) analysis. This work was conducted prior to the installation of the vapor barrier and Sub-Slab Depressurization System (SSDS) at the Subject Property. The samples were collected following the appropriate sampling protocol for PFAS by EPA method 1633 for soil and groundwater.

In addition to the emerging contaminant samples, GZA also collected two waste classification samples in the proposed excavation areas. These areas include the excavation area behind the garage and the floor drain area within the garage bay. The one five-point composite soil sample was analyzed for TCL BNA (Target Compound List Base Neutral), TCL VOC (Volatile Organic Compounds), TAL (Target Analyte List) metals, PCBs

(Polychlorinated biphenyls), TCL Pesticides, Hexavalent Chromium, EPH (Extractable Petroleum Hydrocarbons) Category II, Paint Filter, and Percent Solids. The second five-point composite sample was only for EPH. The waste class samples were five-point composite sample for all analytes with the exception the discrete sample for VOCs. The discrete VOC sample was collected from waste classification sampling location (WC-3) at a depth of 2-3 feet bgs. All waste class analytical results were sent to the applicable disposal facility for review and acceptance.

GZA installed four soil vapor points and placed one ambient air canister along the Subject Property perimeter to identify possible VOCs contamination using analytical method TO-15 (Total Organic — 15). These points were installed in accordance with the NYSDOH procedures and helium was used as the tracer gas prior to sampling at each location. The points were installed to a depth below the building foundation or two feet above groundwater. Based on previous investigations completed onsite, groundwater was historically found at a depth of approximately six feet bgs. The sampling points were installed and left covered in-place for 24 hours before sampling. The sample duration was approximately 8 hours.

2.5.1 Emerging Emergent Contaminant- Soil Sampling Methods & Results

The soil borings were advanced onsite using a direct-push drill rig using two-inch diameter cores in five-foot intervals where all soils were collected in PFAS-free sleeves. The soil borings were advanced to 15 feet bgs. As soils were retrieved, GZA field personnel documented the following soil characteristics: soil lithology, color, and presence of staining or odors were described and classified. The borings were screened using visual and olfactory senses, and a Photo-Ionization Detector (PID). Soil boring/monitoring well logs are attached in **Appendix C2**. SB-1 and SB-2 were sampled two feet above the water table. Depth to water at SB-1 was 8.40 feet and depth to water at SB-2 was 7.20 feet. **Figure 4B** shows all the sample locations.

The analytical results for the soil samples are provided in **Table 3**. The following is a discussion of the results:

- SB-1 was sampled from the 3-5 feet below ground surface bgs. There was one PFAS compound detected in SB-1. Perfluorooctanesulfonic Acid (PFOS) was detected with a concentration of 230 ppt (0.00023 mg/kg).
- SB-2 was sampled from 4-6 feet bgs. There were three PFAS compounds were detected in SB-2. Perfluorobutanesulfonic Acid (PFBS) was detected with a concentration of 63 ppt (0.000063 mg/kg). Perfluorooctanoic Acid (PFOA) was detected with a concentration of 2120 ppt (0.00212 mg/kg). PFOS was detected with a concentration of 157 ppt (0.000157 mg/kg).
- No PFAS compounds were detected in duplicate sample SB-201.

2.5.2 Parameter Soil Vapor Sampling Methods & Results

Four 8-hour soil vapor samples and one 8-hour ambient air sample were collected at the Site. The sub-slab samples (SV-1, SV-2, SV-3, and SV-4), ambient air samples (AA-1) were collected in 2.7-liter, stainless steel, summa canisters.

Soil vapor and ambient air values were compared to Table 3.1 Air Guideline Values derived by NYSDOH. The analytical results for the soil vapor samples and the ambient air sample are provided in **Table 5**. The following is a discussion of the results:

- No exceedances were detected above the Table 3.1 Air Guideline Values.

2.5.3 Emergent Contaminant – Groundwater Sampling Methods & Results

Two temporary monitoring well points were installed to 15 feet bgs. Groundwater samples were collected using the low-flow sampling method and in accordance with our internal SOP for PFAS sampling.

The samples were collected following the appropriate sampling protocol for PFAS by EPA method 1633 for groundwater. The analytical results for the groundwater samples are provided in **Table 4**. The following is a discussion of the results:

- The following compounds were detected in TW-1, TW-2, and duplicate sample TW-101:
    - Perfluorobutanoic Acid (PFBA) (maximum concentration of 0.00758 ug/L)
    - Perfluoropentanoic Acid (PFPeA) (maximum concentration of 0.00557 ug/L)
    - Perfluorobutanesulfonic Acid (PFBS) (maximum concentration of 0.00170 ug/L)
    - Perfluorohexanoic Acid (PFHxA) (maximum concentration of 0.00448 ug/L)
    - Perfluoroheptanoic Acid (PFHpA) (maximum concentration of 0.00253 ug/L)
    - 1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS) (maximum concentration of 0.00744 ug/L)
    - Perfluorooctanesulfonic Acid (PFOS) (maximum concentration of 0.00243 ug/L)
- Perfluorooctanoic Acid (PFOA) was detected in TW-1 and TW-101 at a maximum concentration of 0.0088 ug/L which is greater than the AWQS of 0.0067 ug/L.

2.6 Site Remedial Action – September 2023

A Remedial Action Work Plan (RAWP), dated April 5, 2019, with the proposed sampling plan had been prepared and approved by the NYSDEC in the September 10, 2019, Decision Document for the Glenwood Container Site.

Starting on September 18, 2023 through September 25, 2023, GZA personnel and Renova Environmental Company (Renova) completed remedial work activities at the Site with oversight of NYSDEC's inspector named Bradley Demo. Remedial work activities were conducted according to the approved RAWP. Renova completed the following tasks:

1. Cutting the concrete floor and excavating the material for the five SSDS trenches/pipping runs. Each trench was 12 feet x 2 feet. SSDS construction consisted of 4-inch inner diameter scheduled 40 perforated polyvinyl chloride

(PVC) pipe and solid pipe and fittings for the sub slab piping runs. The piping was installed on a graded 4-inch bed of ¾-inch stone below the slab grade. The trench was backfilled to within four inches of finish grade, and a 20-mil poly liner was installed and anchored to the edges of the concrete. The piping transitioned from PVC below grade to steel piping above grade, this transition was accomplished with a "no hub" coupling see **Figure 8** for SSDS layout and specifications.

2. Excavating soils within CSA#1 to the east of the building within the rear open lot. The excavation was an "L" shape with varying dimensions on each leg of the excavation. The overall total square footage (SF) of CSA#1 was 660 SF.

   NYSDEC required five sidewall and two base confirmatory soil samples be collected from CSA#1. Once CSA#1 was completed it was backfilled with a combination of Site graded material stockpiled from grading activities for the site wide soil cover system and the NYSDEC approved ASTM #3 material.

3. Excavating soils within CSA#2 occurred in the garage bay area on the west side of the building. The excavation was an "L" shaped, the dimensions included:
   - North to South Trench: 22.3 feet in length x 2 feet wide x 2 feet in depth.
   - East to West Trenh: 38 feet in length x 2 feet wide x 2 feet in depth.

   NYSDEC required eight sidewall and two base confirmatory samples be collected from CSA#2. Once CSA#2 was completed it was backfilled with the NYSDEC approved ASTM #3 material to within four inches of finish grade.

4. Preparation and grading of the exterior soil cover system consisting of 12 inches of a combination of sub-grade and top layer, including concrete parking area and driveway. Renova used equipment onsite to grade the outdoor area of the Site. Once the elevation was achieved Renova placed 6 inches of the NYSDEC approved item 4 subbase and NYSDOT No. 2 and 6 inches of 4,000 psi concrete on top of the subbase.

5. The interior soil cover system included placement of a new 3- to 5-inch topping slab over the existing foundation slab to seal any cracks and/or joints.

6. Five permanent vapor pins were installed within the building per manufacturer's guidelines at the NYSDEC approved locations and the SSDSs were turned on and fully functional on May 6, 2024.

7. Three 24-hour confirmatory indoor air samples and one ambient air sample were collected on June 10, 2024 – June 11, 2024.

2.7 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the Decision Document dated September 2019 are as follows:

Groundwater RAOs

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

Soil RAOs

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor RAOs

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

2.8 Remaining Contamination

2.8.1 Soil

Fill materials were used to raise the elevation of the Site and the surrounding area above the Hudson River elevation in the late-1800s. Fill materials were observed across the entire Site to 20 feet bgs. The fill material is underlain by native Hudson River sediments, a clay confining layer. Removal of this extent of fill was not feasible without completely eliminating the land mass. The RI was developed to further investigate this fill material geologic unit in order to determine if there were any particularly high "hot spots" that required removal.

Based on the results of the RI and previous due diligence investigations, fill materials used to develop the Site did not meet all RRSCOs, primarily due to the presence of metals and SVOCs. There were no commercial or industrial exceedances for metals other than commercial exceedances for lead. There were SVOC exceedances mostly consisting of Polycyclic Aromatic Hydrocarbons (PAHs) detected above all applicable SCOs. Lead, mercury, and copper were among the most commonly detected metals above RRSCOs. Other metals detected at levels above RRSCOs include arsenic, barium, and cadmium. A localized area of VOCs (specifically benzene, ethylbenzene, and xylene) and naphthalene exceeding the RRSCOs was also identified in the southeast corner of the Site approximately 14 to 16 feet bgs (directly above the native Hudson River sediments, within the fill material geologic unit).

Contaminated Source Area #2 (CSA#2) - Floor Drain Debris 1

The two floor drains located in the interior loading dock area, originally proposed to be removed during IRM activities (as detailed in the RIWP), were approved by NYSDEC (on September 13, 2017, via email correspondence) to remain in place as they appeared to be connected to the existing storm sewer system. The two floor drains were observed to contain a build-up of debris which was sampled during the RI and previous due diligence investigations. The 2017 RI floor debris sample results detected various

SVOCs, Metals, and PCB exceedances above the NYSDEC RRSCOs. These exceedances are likely attributable to former industrial Site operations.

Figure 4A and Appendix E summarize the results of all soil samples collected in 2017 that exceed the RR SCOs at the site**. Figure 4B and Table 2** summarize the confirmatory soil results from remedial action that occurred in September 2023. PAHs and Lead are the primarily remaining contaminants onsite after "hot spot" removals described below. During the remedial action activities, the existing floor slab was cut, and floor drains were removed and replaced. Approximately 13.3 tons of soil was properly disposed of as hazardous waste from this excavation. It is estimated that there is approximately 21,803 tons of contaminated soil that remains present onsite above the restricted residential levels. This estimated value was determined by taking the approximate area of the lot to a depth of 20 feet bgs(i.e., observed depth of fill material throughout site) and subtracting the tonnage of soil removed during the remedial action (i.e., 13.3 tons). See **Table 2** for remaining contaminant in soil.

CSA#1 – Open Rear Lot, East of the Building

The excavation was an "L" shape with varying dimensions on each leg of the excavation. The overall excavation area of CSA#1 was 660 SF. NYSDEC required five sidewall and two base confirmatory soil samples be collected from CSA#1. Approximately 220.4 tons of soil was properly disposed of as hazardous waste from this excavation. Once CSA#1 was completed it was backfilled with a combination of Site graded material stockpiled from grading activities for the site wide soil cover system and the NYSDEC approved ASTM #3 material. See **Figure 4B** for CSA#1 location, dimensions, and confirmatory sample locations/exceedances. See **Table 2** for remaining contaminants in the soil.

2.8.2 Groundwater

In summary, the 2017 RI groundwater results reported concentrations of VOCs (chloroform) and Metals above the NYSDEC AWQS GA within the fill material above the native Hudson River sediments. Metal exceedances of AWQS GA included iron and

manganese. While these exceedances may have been caused by the historic fill, iron and manganese are also naturally occurring metals and chloroform is a common urban VOC contaminant, which will otherwise be addressed based on the proposed soil mitigation system. Chloroform is a typical by-product of chlorination and is often found in the environment due to leaking water lines. Data did not indicate these groundwater contaminants required remediation, or that off-site impacts from groundwater related to this site were occurring.

Table 4 and **Figures 5A and 5B** summarize the results of all samples of groundwater that exceed the SCGs after completion of the remedial action.

2.8.3 Soil Vapor

In summary, the 2017 soil vapor reported detectable levels of various VOCs, including VOCs listed in the NYSDOH Soil Vapor Decision Matrices (e.g., 1,1,1-trichloroethane, carbon tetrachloride, and tetrachloroethene). When comparing the results to the applicable NYSDOH Decision Matrices, "Mitigate" would be the recommended action for 1,1,1-Trichloroethane of the three 2017 RI sample locations. Details are provided in **Figure 6.**

SSDS trenches were installed beneath the slab of the existing warehouse and a new 4-inch concrete floor was placed onto of the existing floor was installed throughout the warehouse area on the Site to address the concern of potential soil vapor intrusion. The exterior cover system is comprised of a minimum of 12 inches of a combination of sub-grade and top layer, including half foot of ¾ number 57 gravel and a concrete cap in the alley south of the building and concrete covered rear lot east of the building, concrete concrete-covered sidewalks west of the building, and concrete building slabs. An active SSDS was installed as part of the SMP program. The appropriate certificate to operate a source of air contamination was issued by Westchester County Department of Health on May 14, 2024, and is provided within the SSDS Operations and Maintenance Manual – **Appendix F** of this SMP.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC project manager.

This plan provides:

- A description of all IC/ECs on the site.
- The basic implementation and intended role of each IC/EC.
- A description of the key components of the ICs set forth in the Environmental Easement.
- A description of the controls to be evaluated during each required inspection and periodic review.
- A description of plans and procedures to be followed for the implementation of IC/ECs, is provided in **Appendix F - Operations & Maintenance Plan**.
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC project manager.

3.2 Institutional Controls

A series of ICs is required by the RAWP and Decision Document to: (1) implement, maintain, and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the site to industrial uses only. Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on **Figure 7**. These ICs are:

- The property may be used for: industrial use.
- All ECs must be operated and maintained as specified in this SMP.
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Westchester Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP.
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP.
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP.
- Access to the site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- To the extent this current building is ever demolished, the remaining potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on **Figure 7**, and any potential impacts that are identified must be monitored or mitigated.
- Vegetable gardens and farming on the site are prohibited; and
- An evaluation shall be performed to determine the need for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible.

3.3 Engineering Controls

3.3.1 Cover (or Cap)

Exposure to remaining contamination at the site is prevented by a cover system placed over the site. This cover system is comprised of a minimum of 12-inches of a

combination of sub-grade and top layer, including concrete-covered parking area, concrete covered sidewalks, and concrete building slab. **Figure 7** presents the location of the cover system and applicable demarcation layers. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in **Section 4.0** of this SMP. Any work conducted on the Cover must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP), as provided in **Appendix G,** and associated Community Air Monitoring Plan (CAMP) prepared for the site and provided in **Appendix H**. Any intrusive work conducted breaching the cover system must be performed in accordance with the excavation work plan as well as the site-specific HASP and CAMP. Any breach of the site's cover system must be observed by a Professional Engineer (PE) who is licensed and registered in New York State or a qualified person who directly reports to a PE who is licensed and registered in New York State.

3.3.2 Sub-slab Depressurization Systems

The active Sub-Slab Depressurization System (SSDS) consists of five extraction trenches, five monitoring points, and five blowers in the footprint of the existing building. The extraction points are horizontal, perforated, piping designed to provide a pathway for vapors to be drawn in and evacuated. The SSDS trenches were backfilled to within four inches of finish grade and a 20-mil poly liner sealing layer was installed over the piping and anchored to the edges of the concrete. The SSDS included a layer of ¾-inch loosely packed, clean, crushed stone in which the piping was situated. The piping was wrapped in a geotextile to prevent clogging. The piping was run vertically to the ceiling of the building and connected using steel pipe. The vertical run of each riser was topped with a blower.

The SSDS is an Engineering Control for remedial action. The SSDS was started on May 6, 2024. The PE was onsite to complete communication testing at all six monitoring points within the Site building. It was confirmed that there was good communication and vacuum results throughout the entire cover system within the entire building. The FER provides detailed information regarding the SSDS that was designed and properly installed to mitigate soil vapor migration into the building.

Procedures for operating and maintaining the SSDS are documented in the Operation and Maintenance Plan (**Section 5.0**) and within the Westchester County Certificate to Operate permit for the five emission points. The property owner is responsible for the proper maintenance and operation of the SSDS in such a manner that it will not exceed the emission limits or contravene the provisions of applicable State and County air pollution control regulations. The Westchester County Certificate to Operate permits will need to be renewed prior to their expiration on December 31, 2027. As-built drawings, signed and sealed by a PE who is licensed and registered in New York State, are included in **Appendix F – Operations and Maintenance Manual**. All provisions and conditions set by the Westchester County Department of Health are provided in Attachment D of the Operations and Maintenance Manual included in this SMP (i.e., **Appendix F**). **Figures 7 and 8** show the locations of the ECs for the site.

3.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the site. Confirmation samples require Category B deliverables and a Data Usability Summary Report (DUSR).

There is no groundwater monitoring program requirement for this Site.

The remedial party will also conduct any needed site restoration activities, such as concrete patching and decommissioning treatment system equipment in compliance with the Excavation Work Plan described below. Also, the remedial party will ensure that no ongoing erosion occurs on the site.

3.3.3.1 – Composite Cover System

The composite cover system is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

3.3.3.2 - Sub-Slab Depressurization System

The SSDS operation will not be discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH project managers. If monitoring data indicates that the SSDS may no longer be required, a proposal to discontinue the SSDS will be submitted by the remedial party to the NYSDEC and NYSDOH project managers.

3.4 Excavation Work Plan / Soil Excavation

The Excavation Work Plan (EWP) provided in **Appendix I** outlines the procedures required to be implemented in the event the cover system, including the foundation slab is breached, penetrated, or temporarily removed.

If any cover system disturbance requires soil excavation, it will be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP), provided as **Appendix G**, and associated Community Air Monitoring Plan (CAMP) prepared for the site and provided in **Appendix H**. Any disturbance of the site's cover system, including the foundation slab, must be overseen by a qualified environmental professional as defined in 6 NYCRR Part 375, or a Professional Engineer (PE) who is licensed and registered in New York State (NYS), or a qualified person who directly reports to a NYS licensed/registered PE.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the site are included in the Quality Assurance Project Plan provided in **Appendix J**.

This Monitoring and Sampling Plan describes the methods to be used in the event monitoring is required:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils).
- Assessing compliance with applicable NYSDEC standards, criteria, and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol, and frequency.
- Information on all designed monitoring systems.
- Analytical sampling program requirements.
- Inspection and maintenance requirements for monitoring wells.
- Monitoring well decommissioning procedures; and

- Annual inspection and periodic certification.

Reporting requirements are provided in **Section 7.0** of this SMP.

4.2 Site-Wide Inspections

Site-wide inspections will be performed at a minimum of once per year. These inspections must be conducted when the ground surface is visible (i.e., no snow cover). Site-wide inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in **Appendix K – Site Management Forms**. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage.
- An evaluation of the condition and continued effectiveness of ECs.
- General site conditions at the time of the inspection.
- Whether stormwater management systems, such as basins and outfalls, are working as designed.
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed.
- If these controls continue to be protective of human health and the environment.
- Compliance with requirements of this SMP and the Environmental Easement.
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in **Section 7.0** of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event, if possible, to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public. The remedial party will submit follow-up status reports to the NYSDEC within 45 days of the event on actions taken to respond to any emergency event requiring ongoing responsive action, describing, and documenting actions taken to restore the effectiveness of the ECs.

All inspection reports and any follow-up activities based on the inspections will be maintained in the building office or some other specific locations. This would include all maintenance activities.

4.3 Treatment System Monitoring and Sampling

4.3.1 Remedial System Monitoring

Monitoring of the SSDS will be performed on a routine basis, as identified in **Table 6**, Remedial System Monitoring Requirements and Schedule (see below). The monitoring of remedial systems must be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, or a qualified person who directly reports to a PE, or the site PE, who is licensed and registered in New York State. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager. A visual inspection of the complete system will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the system. SSDS components to be monitored include, but are not limited to, the components included in **Table 6**, below.

Table 6 – Remedial System Monitoring Requirements and Schedule

Remedial System Component	**Monitoring Parameter**	**Operating Range**	**Monitoring Schedule**
Active SSDS	Blower operation, sub-slab vacuum, visible penetrations, openings, general system piping, or consequential cracks in basement floor slab	Manometer readings and differential pressure measurements	Annually

A complete list of components to be inspected is provided in the Inspection Checklist, provided in **Appendix K - Site Management Forms**. If any equipment readings are not within their specified operation range, any equipment is observed to be malfunctioning, or

the system is not performing within specifications; then maintenance and repair, as per the Operation and Maintenance Plan, are required immediately.

4.3.2 Remedial System Sampling

The SSDS effluent will be sampled annually to monitor effluent levels. Should the 1,1,1 TCA concentrations in the SSDS effluent appear to be below NYSDOH AGVs, grab soil gas samples will be collected while the system is operating. In the event that the soil gas samples are below mitigation levels, as presented in the NYSDOH Decision Matrices A to F.

Samples shall be collected from the SSDS on a routine basis during the heating season. Sampling locations, required analytical parameters, and schedule are provided in **Table 7– Remedial System Sampling Requirements and Schedule**. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Table 7 – Remedial System Sampling Requirements and Schedule

Sampling Location	Analytical Parameters VOC (EPA Method TO-15)	Schedule
SSDS Effluent	X	Annually
Sub-Slab Soil Vapors	X	Annually
Co-located Indoor Air Samples	X	Annually

Detailed sample collection and analytical procedures and protocols are provided in **Appendix J –Quality Assurance Project Plan**.

The remedial party will properly dispose of wastes generated by the remedial system at off-site disposal facilities according to local, state, and federal laws and

regulations. Wastes will be tested before disposal to comply with the permit conditions of the disposal facility. No wastes are expected to be generated by the SSDS, should there be a need for maintenance or repair to the system, NYSDEC will be consulted and made aware of any off-site disposal efforts that may be needed.

4.3.3 Post Remediation Media Monitoring and Sampling

Indoor and ambient air sampling was completed from June 10 to June 11, 2024. One ambient air sample and three indoor air samples ran for 24 hours and were collected with 6-liter summa canisters. The indoor air samples were collected from inside the Site building in the northwest portion, southwest portion, and center of the warehouse area. The ambient air sample was collected on the east side of the Site, in the concrete paved parking area. Each air sample was analyzed for TO-15 analysis and compared to the NYDOH Matrix B Indoor Air Concentrations Criteria per the Guidance for Evaluating Soil Vapor Intrusion. Methylene chloride and carbon tetrachloride were found in exceedance of the selected criteria listed below.

Sample I.D.:			**AA-1**	**IDA-1**	**IDA-2**	**IDA-3**
Analyte	**NY-IAC-A**	**NY-IAC-B**	**Conc (mg/kg)**	**Conc (mg/kg)**	**Conc (mg/kg)**	**Conc (mg/kg)**
Methylene chloride	N/A	3	3.93	3.28	4.59	3.82
Carbon tetrachloride	0.2	N/A	0.472	0.491	0.491	0.51

Soil vapor evaluation will be performed in during the heating season of2025/2026 to confirm the SSDS is fully functional and effectively mitigating soil vapor, and the results will be reported in the first PRR.

4.3.4 Monitoring and Sampling Protocol

All soil vapor effluent sampling activities will be recorded in a field book and associated sampling log as provided in **Appendix K - Site Management Forms**. The sampling log will serve as the inspection form for the monitoring network. Additional details regarding monitoring and sampling protocols are provided in the site-specific QAPP provided as **Appendix J** of this document.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

This Operation and Maintenance Plan provides a brief description of the measures necessary to operate, monitor, and maintain the mechanical components of the remedy selected for the site. This Operation and Maintenance Plan:

- Includes the procedures necessary to allow individuals unfamiliar with the site to operate and maintain the SSDS.
- Will be updated periodically to reflect changes in site conditions or the way the SSDS is operated and maintained.

Further details regarding the Operation and Maintenance of the SSDS are provided in **Appendix F - Operation and Maintenance Manual**. A copy of this Operation and Maintenance Manual, along with the complete SMP, is to be maintained at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of this SMP.

5.2 Remedial System (or other Engineering Control) Performance Criteria

An active SSDS has been installed in the onsite building and a Site cover has been installed across the Site. The active SSDS, with a blower, will be operated under the SMP program. The cover system consists of 12-inches of a combination of sub-grade and top layer, including concrete parking lot and driveway, and repair/restoration to the building interior concrete slab by an additional 3-6 inches of concrete-cover to the existing interior slab to prevent human exposure to remaining contaminated soil/fill remaining at the site (see **Figure 9**).

The design purpose of the SSDS is to create a negative pressure under the entire concrete floor slab and mitigate any potential soil vapor intrusion concerns in the building. Based on the vacuum readings collected on May 6, 2024 from monitoring points (MP-1

through MP-5 data shown in table below) after start-up, this meets the minimum 0.004 inches of water column to indicate that the SSDS is effectively creating a negative pressure gradient that draws vapor away from the building's foundation.

Monitoring Point	Vacuum Reading
MP-1	-0.080
MP-2	-0.087
MP-3	-0.140
MP-4	-0.046
MP-5	-0.024

There are five separate permits for the five roof top emission points (EP-01 – EP-05). The Westchester County Department of Health certificate to operate permit list the following five conditions to operate EP01 – EP-05:

1. This source of contamination shall be operated in compliance with the previsions of Chapter 873, Article XIII, of the Laws of Westchester County and the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official Compilation of Codes, Rules and Regulations of the State of New York.
2. This Certificate may be suspended or revoked, as provided by the Laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with provisions of Chapter 873, Article XIII of the Laws of Westchester County, or of the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.
3. Air contaminants collected by air cleaning devices shall be handled and disposed of in a manner whereby they will not be introduced in the outer air.
4. That the construction or modification of this source of air contamination is in accordance with figure 1, 2A, 2B, 3, 4, 5 and dated February 24, 2023, and marked “As-Built”.
5. That the emission from this source of air contamination shall not exceed those set forth on the attached **Appendix A**.

All provisions and conditions set by Westchester County Department of Health are provided in Attachment D of the Operations and Maintenance Manual included in this SMP (i.e., **Appendix F**).

5.3 Operation and Maintenance of Sub-Slab Depressurization System

The following sections provide a description of the operations and maintenance of SSDS. Cut-sheets and as-built drawings for SSDS are provided in **Appendix F- Operations and Maintenance Manual**.

5.3.1 System Start-Up and Testing

The start-up test was performed to evaluate the effectiveness of the SSDS. The design objective was to create a negative pressure field of - 0.004 inches of water column (inches wc). A pressure field extension test was performed to document that the full extent of the building slab is depressurized by the SSDS. Post mitigation exhaust airflow, system vacuum, and sub slab vacuum was also measured and recorded in the field log book.

A Site visit was performed after startup to collect system performance information and indoor and ambient air samples. Three summa canisters were deployed within the building and one summa cannister was deployed outside the building to collect an air sample for TO-15 VOC laboratory analysis at a NYSDOH Environmental Laboratory Accreditation Program (ELAP) laboratory. The effluent system testing will occur on an annual basis. If any future changes are made to the SSDS, then the system would need to be vacuum tested to confirm that it is performing as designed (i.e., maintaining a negative pressure field of - 0.004 inches of WC beneath the entire building slab).

A startup and the shutdown report will be submitted to NYSDEC and NYSDOH with or before the first Periodic Review Report (PRR).

5.3.2 Routine System Operation and Maintenance

All manufacturers' product data, manuals, and drawings related to the SSDS components are provided in **Appendix F -Operations and Maintenance Manual**. Copies of these materials will be maintained on-site and available for reference in the event of troubleshooting, adjustments or repairs are necessary. Following startup of the SSDS, all gauges and flow settings will be recorded for future comparison purposes if the system is malfunctioning. The SSDS will be routinely maintained as required by the manufacturers of the components. All maintenance on mitigation system will be performed by qualified maintenance personnel.

The concrete cover system annual inspection and maintenance routine includes checking for visual signs of corrosion, damage, cracks, or other deterioration of the cover. This also includes visual assessments to determine issues early to prevent further damage and ensure the system's functionality and safety. The inspection will include a site walk to look for signs of deterioration, wear, uneven settlement, etc. An inspection form will be completed to document the findings of the inspection including photographs of representative site conditions and findings.

Inspection and maintenance of the SSDS and cover system include making sure the SSDS is running continuously and only be shut down in case of emergency, visual inspection of the equipment and piping, inspection of exhaust points to verify that no air intakes have been located nearby, identification of any leaks, and checking the fans and alarms condition and functionality. **Table 8** provides a summary, and a schedule of routine maintenance and includes the initial start-up testing for air flow and vacuum.

Table 8. Routine Maintenance Annual Checklist

System component	Date	Condition/readings	
Sealing	Nov. 2024	Check the condition of floor and pipe penetrations	
Pipe	Nov. 2024	Check for damage/leaks on pipe runs.	
Blowers	Date	Airflow (cfm)	Static Vacuum ("W.C.)
Blower 1	Nov. 2024	31	3.14
Blower 2	Nov. 2024	31	3.14

System component	Date	Condition/readings	
Blower 3	Nov. 2024	31	3.14
Blower 4	Nov. 2024	31	3.14
Blower 5	Nov. 2024	31	3.14
Sub Slab Vacuum Ports	Date	Gate Valve Position (% open)	Vacuum ("W.C.)
Riser#1	Nov. 2024	100% open	3.14
Riser#2	Nov. 2024	100% open	3.14
Riser#3	Nov. 2024	100% open	3.14
Riser#4	Nov. 2024	100% open	3.14
Riser#5	Nov. 2024	100% open	3.14
Monitoring Points	Date	Vacuum ("W.C.)	
MP-1	Nov. 2024	-0.080	
MP-2	Nov. 2024	-0.087	
MP-3	Nov. 2024	-0.140	
MP-4	Nov. 2024	-0.046	
MP-5	Nov. 2024	-0.024	
Alarms	Date	Condition/Function	
Alarm 1	Nov. 2024	Good/functional	
Alarm 2	Nov. 2024	Good/functional	
Alarm 3	Nov. 2024	Good/functional	
Alarm 4	Nov. 2024	Good/functional	
Alarm 5	Nov. 2024	Good/functional	

5.3.3 Non-Routine Operation and Maintenance

In the event of unusual fan noise, failure to start, physical damage, or repeated circuit breaker trip, turn fan off and service or replace. Any changes in the structure, SSDS, slab conditions, etc. will require a re-evaluation of the SSDS.

5.3.4 System Monitoring Devices and Alarms

The SSDS is being monitored by a Sentinel Monitoring System. The system is designed to be an easy, cloud–based monitoring and data logging system to notify the property owner when the SSDS equipment are not functioning as designed. Monitored conditions include temperature, humidity levels, pressure, flow, leak detection,

Uninterruptible Power Service (UPS) systems, and more. The monitoring system allows multiple users to be notified immediately of detected alert conditions. Notification can occur via voice call, e–mail, or SMS (text message). There is an internal battery backup system (UPS) in case of power outages.

The Sentinel is housed in a 5.5-inch x 6.3-inch x 1.5-inch enclosure and is mounted on a wall by the building's electrical panels. The sensor inputs labeled zones 1-12 are designed to interface with normally open/normally closed devices, 2.8K or 10K temperature sensors and 4-20mA transducers.

- The "Power On" LED GREEN light indicates that the Sentinel unit is on and operational.
- The "Alarm" LED RED light indicates if an alarm exists.
- The "Online" LED GREEN light indicates that the Sentinel unit is communicating with the Sentinel server.
- The "Standby" LED YELLOW light indicates that the Sentinel unit is in standby mode.

Should any questions arise during operations of the Sentinel, they must be contacted at Sensaphone Technical Service Department at 610-558-2700, Technical support is available from 8:00 AM to 5:00 PM, Monday - Friday, eastern time.

5.3.5 Fire Safety

As appropriate, the fire department and other emergency response groups will be notified immediately by telephone of the emergency. Fire extinguishers are to be made available on-site for trained personnel to use on minor, controllable fires without endangering the safety of others. If the nature of the fire is beyond control with a fire extinguisher, the fire department shall be notified immediately.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

Based on a vulnerability assessment performed for the Site concluded that the SSDS is an active system that is susceptible to storm-related damage caused by flooding, erosion, high winds, loss of power etc.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the site during site management, and as reported in the PRR.

The Green Remediation Evaluation will include the following items:

- Fuel usage associated with travel to and from the Site for sampling and monitoring activities.

- Single use materials consumption associated with sampling and maintenance activities relating to the remedy.
- Resource consumption, such as groundwater or potable water, associated with sampling and maintenance activities relating to the remedy.
- Equipment and power usage associated with sampling and maintenance activities relating to the remedy.
- Modifications resulting from the Green Remediation Evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the NYSDEC project manager feels appropriate (e.g., during significant maintenance events or in conjunction with storm recovery activities). Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting these modifications will be provided in the PRR.

6.2.2 Frequency of System Checks, Sampling, and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site to conduct system checks and/or collect samples, and shipping samples to a laboratory for analysis have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

6.2.3 Metrics and Reporting

As discussed in **Section 7.0** and as shown in **Appendix K – Site Management Forms**, information on energy usage, solid waste generation, transportation and shipping, water usage, and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits.

6.3 Remedial System Optimization

A Remedial System Optimization (RSO) study will be conducted any time that the NYSDEC project manager or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document.
- The management and operation of the remedial system exceeds the estimated costs.
- The remedial system is not performing as expected or as designed.
- Previously unidentified source material may be suspected.
- Plume shift has potentially occurred.
- Site conditions change due to development, change of use, change in groundwater use, etc.
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and

information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focus on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time limits. Green remediation technology and principles are to be considered when performing the RSO.

7.0. REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance, and monitoring events will be recorded on the appropriate site management forms provided in **Appendix K**. These forms are subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, or a qualified person who directly reports to the site PE or the PE who is licensed and registered in New York State.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of **Table 9** and summarized in the Periodic Review Report.

Table 9: Schedule of Interim Monitoring/Inspection Reports

Task/Report	**Reporting Frequency***
Inspection Report	Annually
Periodic Review Report	Initial report is due 16 months after the COC is granted and annually thereafter
SSDS Sampling Report	Annually or as adjusted after shut down

* The frequency of events will be conducted as specified until otherwise modified and or approved by the NYSDEC project manager.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period.
- Name, company, and position of person(s) conducting monitoring/inspection activities.
- Description of the activities performed.

- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet).

- Types of samples collected (e.g., sub-slab vapor, indoor air, outdoor air).

- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation).

- Sampling results in comparison to appropriate standards/criteria.

- A figure illustrating sampling locations.

- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format).

- Any observations, conclusions, or recommendations; and

- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event.

- Name, company, and position of person(s) conducting maintenance activities.

- Description of maintenance activities performed.

- Any modifications to the system.

- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and

- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event.

- Name, company, and position of person(s) conducting non-routine maintenance/repair activities.

- Description of non-routine activities performed.

- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and

- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A Periodic Review Report will be submitted to the NYSDEC project manager beginning sixteen (16) months after the Certificate of Completion is issued. After submitting the initial Periodic Review Report, the next PRR shall be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. If the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in **Appendix A -Environmental Easement**. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment, and certification of all ECs/ICs required by the remedy for the site.

- Results of the required annual site inspections, fire inspections and severe condition inspections, if applicable.

- Description of any change of use, import of materials, or excavation that occurred during the certifying period.

- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.

- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation.

- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.

- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including but not limited to:

  – Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data.

  – Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis.

  – O&M data summary tables.

  – A current plume map for sites with remaining groundwater contamination; and

  – A groundwater elevation contour map for each gauging event.

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS^{TM} database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

- A site evaluation, which includes the following:

  – The compliance of the remedy with the requirements of the site-specific Remedial Action Work Plan (RAWP), ROD or Decision Document.

  – The operation and the effectiveness of all treatment units, etc., including identification of any repairs or modifications needed.

  – Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored.

- Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan.
- An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the RAWP, ROD or Decision Document; and
- The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice and registered in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all the following statements are true:*

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction.*
- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department.*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment.*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control.*
- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control.*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document.*
- *Use of the site is compliant with the environmental easement.*

- *The engineering control systems are performing as designed and are effective.*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Peter Jaran, of 104 West 29th Street 10th Floor New York, NY 10001, am certifying as Owner's/Remedial Party's Designated Site Representative: *I have been authorized and designated by all site owners/remedial parties to sign this certification for the site."*

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The Periodic Review Report may also need to be submitted in hard-copy format if requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide details and schedule for performing the work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

7.4 Remedial System Optimization Report

If an RSO is to be performed (see **Section 6.3**), upon its completion, an RSO report must be submitted to the NYSDEC project manager for approval. A general outline for the RSO report is provided in **Appendix L**. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager.

8.0 REFERENCES

Phase I Environmental Site Assessment, 72 Alexander Street, City of Yonkers, Westchester County, New York, Prepared by Paulus, Sokolowski and Sartor Engineering, PC (July 2011)

Remedial Investigation Workplan, 72 Alexander Street, City of Yonkers, Westchester County, New York, Prepared by Paulus, Sokolowski and Sartor Engineering, PC (July 2011)

Interim Remedial Measures (IRM) and Remedial Investigation Report, 72 Alexander Street, City of Yonkers, Westchester County, New York, Prepared by Paulus, Sokolowski and Sartor Engineering, PC (August 27, 2018)

Remedial Action Work Plan, 72 Alexander Street, City of Yonkers, Westchester County, New York, Prepared by Paulus, Sokolowski and Sartor Engineering, PC (April 5, 2019)

Technical Memorandum Perimeter Soil Vapor and Emergent Contaminant Sampling, Glennwood Container Site, 72 Alexander Street, Yonkers, NY, Prepared by Equity Environmental Engineering, a Divisions of GZA GeoEnvironmental (September 1, 2023)

Technical Memorandum, Revised Communication Testing for Proposed Sub-Slab Depressurization System, Glenwood Container Site, 72 Alexander Street, Yonkers, NY (Work Plan) Prepared by Equity Environmental Engineering, a Divisions of GZA GeoEnvironmental (August 22, 2023)

Westchester County Department of Health, Certificate to Operate Emission Points: EP-01, EP-02, EP-03, EP-04, and EP-05, Glenwood Container Site, 72 Alexander Street, Yonkers

6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC DER-10 – “Technical Guidance for Site Investigation and Remediation”.

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

TABLE 1 – Notifications

See Section 1.3 of this SMP, Page 6 for Table 1.

TABLE 2

Remaining Soil Sample Exceedances

Table 2
Remaining Soil Sample Exceedances
NYSDEC Site Number: C360154
September 2023

SAMPLE ID:	NY-RESRR	NY-RESGW	CSA#1-SW-1(4)				CSA#1-SW-2(5)				CSA#1-SW-3(5)			
LAB ID:			L2355413-01				L2355413-02				L2355413-03			
COLLECTION DATE:			9/20/2023				9/20/2023				9/20/2023			
SAMPLE DEPTH (ft bgs):			4				5				5			
SAMPLE MATRIX:			SOIL				SOIL				SOIL			
ANALYTE	(mg/kg)	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS														
Acenaphthene	100	98	ND		0.15	0.019	ND		0.15	0.02	2.2		0.81	0.1
1,2,4-Trichlorobenzene			ND		0.19	0.021	ND		0.19	0.022	ND		1	0.12
Hexachlorobenzene	1.2	3.2	ND		0.11	0.021	ND		0.11	0.021	ND		0.61	0.11
Bis(2-chloroethyl)ether			ND		0.17	0.025	ND		0.17	0.026	ND		0.92	0.14
2-Chloronaphthalene			ND		0.19	0.018	ND		0.19	0.019	ND		1	0.1
1,2-Dichlorobenzene	100	1.1	ND		0.19	0.034	ND		0.19	0.034	ND		1	0.18
1,3-Dichlorobenzene	49	2.4	ND		0.19	0.032	ND		0.19	0.033	ND		1	0.17
1,4-Dichlorobenzene	13	1.8	ND		0.19	0.032	ND		0.19	0.033	ND		1	0.18
3,3'-Dichlorobenzidine			ND		0.19	0.05	ND		0.19	0.051	ND		1	0.27
2,4-Dinitrotoluene			ND		0.19	0.037	ND		0.19	0.038	ND		1	0.2
2,6-Dinitrotoluene			ND		0.19	0.032	ND		0.19	0.033	ND		1	0.17
Fluoranthene	100	1000	0.35		0.11	0.021	0.044	J	0.11	0.022	21		0.61	0.12
4-Chlorophenyl phenyl ether			ND		0.19	0.02	ND		0.19	0.02	ND		1	0.11
4-Bromophenyl phenyl ether			ND		0.19	0.028	ND		0.19	0.029	ND		1	0.16
Bis(2-chloroisopropyl)ether			ND		0.22	0.032	ND		0.23	0.033	ND		1.2	0.17
Bis(2-chloroethoxy)methane			ND		0.2	0.019	ND		0.21	0.019	ND		1.1	0.1
Hexachlorobutadiene			ND		0.19	0.027	ND		0.19	0.028	ND		1	0.15
Hexachlorocyclopentadiene			ND		0.53	0.17	ND		0.55	0.17	ND		2.9	0.92
Hexachloroethane			ND		0.15	0.03	ND		0.15	0.031	ND		0.81	0.16
Isophorone			ND		0.17	0.024	ND		0.17	0.025	ND		0.92	0.13
Naphthalene	100	12	0.033	J	0.19	0.023	ND		0.19	0.023	0.61	J	1	0.12
Nitrobenzene			ND		0.17	0.028	ND		0.17	0.028	ND		0.92	0.15
NDPA/DPA			ND		0.15	0.021	ND		0.15	0.022	ND		0.81	0.12
n-Nitrosodi-n-propylamine			ND		0.19	0.029	ND		0.19	0.03	ND		1	0.16
Bis(2-ethylhexyl)phthalate			ND		0.19	0.064	ND		0.19	0.066	ND		1	0.35
Butyl benzyl phthalate			ND		0.19	0.047	ND		0.19	0.048	ND		1	0.26
Di-n-butylphthalate			ND		0.19	0.035	ND		0.19	0.036	ND		1	0.19
Di-n-octylphthalate			ND		0.19	0.063	ND		0.19	0.065	ND		1	0.34
Diethyl phthalate			ND		0.19	0.017	ND		0.19	0.018	ND		1	0.094
Dimethyl phthalate			ND		0.19	0.039	ND		0.19	0.04	ND		1	0.21
Benzo(a)anthracene	1	1	0.28		0.11	0.021	0.036	J	0.11	0.022	**9.2**		**0.61**	**0.11**
Benzo(a)pyrene	1	22	0.25		0.15	0.046	0.053	J	0.15	0.047	9.1		0.81	0.25
Benzo(b)fluoranthene	1	1.7	0.32		0.11	0.031	0.064	J	0.11	0.032	**9.7**		**0.61**	**0.17**
Benzo(k)fluoranthene	3.9	1.7	0.11		0.11	0.03	ND		0.11	0.031	**2.8**		**0.61**	**0.16**
Chrysene	3.9	1	0.31		0.11	0.019	0.04	J	0.11	0.02	**8**		**0.61**	**0.1**
Acenaphthylene	100	107	0.11	J	0.15	0.029	ND		0.15	0.03	0.85		0.81	0.16
Anthracene	100	1000	0.057	J	0.11	0.036	ND		0.11	0.037	6.3		0.61	0.2
Benzo(ghi)perylene	100	1000	0.17		0.15	0.022	0.044	J	0.15	0.022	4.6		0.81	0.12
Fluorene	100	386	0.019	J	0.19	0.018	ND		0.19	0.018	2.4		1	0.099
Phenanthrene	100	1000	0.21		0.11	0.023	0.031	J	0.11	0.023	21		0.61	0.12
Dibenzo(a,h)anthracene	0.33	1000	0.046	J	0.11	0.022	ND		0.11	0.022	1		0.61	0.12
Indeno(1,2,3-cd)pyrene	0.5	8.2	0.17		0.15	0.026	0.044	J	0.15	0.027	5		0.81	0.14
Pyrene	100	1000	0.4		0.11	0.018	0.04	J	0.11	0.019	18		0.61	0.1
Biphenyl			ND		0.42	0.024	ND		0.44	0.025	0.21	J	2.3	0.13
4-Chloroaniline			ND		0.19	0.034	ND		0.19	0.035	ND		1	0.18
2-Nitroaniline			ND		0.19	0.036	ND		0.19	0.037	ND		1	0.2
3-Nitroaniline			ND		0.19	0.035	ND		0.19	0.036	ND		1	0.19
4-Nitroaniline			ND		0.19	0.077	ND		0.19	0.079	ND		1	0.42
Dibenzofuran	59	210	ND		0.19	0.018	ND		0.19	0.018	1.4		1	0.096
2-Methylnaphthalene			0.026	J	0.22	0.022	ND		0.23	0.023	0.56	J	1.2	0.12
1,2,4,5-Tetrachlorobenzene			ND		0.19	0.019	ND		0.19	0.02	ND		1	0.11
Acetophenone			ND		0.19	0.023	ND		0.19	0.024	ND		1	0.12
2,4,6-Trichlorophenol			ND		0.11	0.035	ND		0.11	0.036	ND		0.61	0.19
p-Chloro-m-cresol			ND		0.19	0.028	ND		0.19	0.028	ND		1	0.15
2-Chlorophenol			ND		0.19	0.022	ND		0.19	0.023	ND		1	0.12
2,4-Dichlorophenol			ND		0.17	0.03	ND		0.17	0.031	ND		0.92	0.16
2,4-Dimethylphenol			ND		0.19	0.062	ND		0.19	0.063	ND		1	0.34
2-Nitrophenol			ND		0.4	0.07	ND		0.41	0.072	ND		2.2	0.38
4-Nitrophenol			ND		0.26	0.076	ND		0.27	0.078	ND		1.4	0.41
2,4-Dinitrophenol			ND		0.9	0.087	ND		0.92	0.089	ND		4.9	0.47
4,6-Dinitro-o-cresol			ND		0.48	0.09	ND		0.5	0.092	ND		2.6	0.49
Pentachlorophenol	6.7	0.8	ND		0.15	0.041	ND		0.15	0.042	ND		0.81	0.22
Phenol	100	0.33	ND		0.19	0.028	ND		0.19	0.029	ND		1	0.15
2-Methylphenol	100	0.33	ND		0.19	0.029	ND		0.19	0.03	ND		1	0.16
3-Methylphenol/4-Methylphenol	100	0.33	ND		0.27	0.029	ND		0.28	0.03	ND		1.5	0.16
2,4,5-Trichlorophenol			ND		0.19	0.036	ND		0.19	0.037	ND		1	0.19
Benzoic Acid			ND		0.6	0.19	ND		0.62	0.19	ND		3.3	1
Benzyl Alcohol			ND		0.19	0.057	ND		0.19	0.058	ND		1	0.31
Carbazole			0.018	J	0.19	0.018	ND		0.19	0.018	1.2		1	0.099
1,4-Dioxane	13	0.1	ND		0.028	0.0086	ND		0.029	0.0088	ND		0.15	0.047
Total SVOCs			2.879	-	-	-	0.396	-	-	-	125.13	-	-	-
POLYCHLORINATED BIPHENYLS BY GC														
Aroclor 1016	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1221	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1232	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1242	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1262	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1268	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
PCBs, Total	1	3.2	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL METALS														
Lead, Total	400	450	282		2.21	0.118	62.3		2.23	0.119	**478**		**2.39**	**0.128**
Mercury, Total	0.81	0.73	0.188		0.074	0.048	0.086		0.075	0.049	0.502		0.079	0.052
GENERAL CHEMISTRY														
Solids, Total			86.6		0.1	NA	85.9		0.1	NA	81.5		0.1	NA

Notes:

1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   - - = Not Analyzed
   CAS = Chemical Abstracts Service Registry Number
   Conc = Concentration
   J = Indicates estimated value
   mg/kg = micrograms per kilogram
   MDL = Method detection limit
   ND = Not detected
   NS = No Standard
   NY-RESRR = New York NYCRR Part 375 Restricted-Residential Criteria, effective December 14, 2006.
   NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
   Q = Qualifier
   RL = Reporting limit
   Shaded yellow = Conc exceeds NY-RESRR
   Bold = Conc exceeds NY-RESGW
   Shaded gray = RL exceeds NY-RESRR or NY-RESGW
3. CSA#1-DUPLICATE parent sample is CSA#1-SW-5(4); DUPLICATE parent sample is CSA#2-BASE-1(2)

Table 2
Remaining Soil Sample Exceedances
NYSDEC Site Number: C360154
September 2023

SAMPLE ID:		CSA#1-SW-4(4)				CSA#1-SW-5(4)				CSA#1-DUPLICATE			
LAB ID:		L2355413-04				L2355829-06				L2355829-05			
COLLECTION DATE:	NY-RESRR	9/20/2023				9/21/2023				9/21/2023			
SAMPLE DEPTH (ft bgs):		4				4				4			
SAMPLE MATRIX:		SOIL				SOIL				SOIL			
ANALYTE	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS													
Acenaphthene	100	0.17	J	0.18	0.023	ND		0.16	0.021	0.14	J	0.17	0.022
1,2,4-Trichlorobenzene		ND		0.22	0.025	ND		0.2	0.023	ND		0.22	0.025
Hexachlorobenzene	1.2	ND		0.13	0.025	ND		0.12	0.022	ND		0.13	0.024
Bis(2-chloroethyl)ether		ND		0.2	0.03	ND		0.18	0.027	ND		0.19	0.029
2-Chloronaphthalene		ND		0.22	0.022	ND		0.2	0.02	ND		0.22	0.021
1,2-Dichlorobenzene	100	ND		0.22	0.04	ND		0.2	0.036	ND		0.22	0.039
1,3-Dichlorobenzene	49	ND		0.22	0.038	ND		0.2	0.034	ND		0.22	0.037
1,4-Dichlorobenzene	13	ND		0.22	0.038	ND		0.2	0.035	ND		0.22	0.038
3,3'-Dichlorobenzidine		ND		0.22	0.059	ND		0.2	0.053	ND		0.22	0.057
2,4-Dinitrotoluene		ND		0.22	0.044	ND		0.2	0.04	ND		0.22	0.043
2,6-Dinitrotoluene		ND		0.22	0.038	ND		0.2	0.034	ND		0.22	0.037
Fluoranthene	100	1.9		0.13	0.025	0.15		0.12	0.023	2.1		0.13	0.025
4-Chlorophenyl phenyl ether		ND		0.22	0.024	ND		0.2	0.021	ND		0.22	0.023
4-Bromophenyl phenyl ether		ND		0.22	0.034	ND		0.2	0.03	ND		0.22	0.033
Bis(2-chloroisopropyl)ether		ND		0.26	0.038	ND		0.24	0.034	ND		0.26	0.037
Bis(2-chloroethoxy)methane		ND		0.24	0.022	ND		0.22	0.02	ND		0.23	0.022
Hexachlorobutadiene		ND		0.22	0.032	ND		0.2	0.029	ND		0.22	0.032
Hexachlorocyclopentadiene		ND		0.63	0.2	ND		0.57	0.18	ND		0.62	0.2
Hexachloroethane		ND		0.18	0.036	ND		0.16	0.032	ND		0.17	0.035
Isophorone		ND		0.2	0.029	ND		0.18	0.026	ND		0.19	0.028
Naphthalene	100	ND		0.22	0.027	0.033	J	0.2	0.024	0.82		0.22	0.026
Nitrobenzene		ND		0.2	0.033	ND		0.18	0.03	ND		0.19	0.032
NDPA/DPA		ND		0.18	0.025	ND		0.16	0.023	ND		0.17	0.024
n-Nitrosodi-n-propylamine		ND		0.22	0.034	ND		0.2	0.031	ND		0.22	0.033
Bis(2-ethylhexyl)phthalate		ND		0.22	0.076	ND		0.2	0.069	ND		0.22	0.074
Butyl benzyl phthalate		ND		0.22	0.056	ND		0.2	0.05	ND		0.22	0.054
Di-n-butylphthalate		ND		0.22	0.042	ND		0.2	0.038	ND		0.22	0.041
Di-n-octylphthalate		ND		0.22	0.075	ND		0.2	0.068	ND		0.22	0.073
Diethyl phthalate		ND		0.22	0.02	ND		0.2	0.018	ND		0.22	0.02
Dimethyl phthalate		ND		0.22	0.046	ND		0.2	0.042	ND		0.22	0.045
Benzo(a)anthracene	1	**1.4**		**0.13**	**0.025**	0.097	J	0.12	0.022	**1.5**		**0.13**	**0.024**
Benzo(a)pyrene	1	1.3		0.18	0.054	0.097	J	0.16	0.049	1.2		0.17	0.052
Benzo(b)fluoranthene	1	1.7		0.13	0.037	0.11	J	0.12	0.034	1.5		0.13	0.036
Benzo(k)fluoranthene	3.9	0.55		0.13	0.035	0.043	J	0.12	0.032	0.53		0.13	0.034
Chrysene	3.9	**1.6**		**0.13**	**0.023**	0.12		0.12	0.021	**1.8**		**0.13**	**0.022**
Acenaphthylene	100	0.47		0.18	0.034	ND		0.16	0.031	0.56		0.17	0.033
Anthracene	100	0.51		0.13	0.043	ND		0.12	0.039	0.58		0.13	0.042
Benzo(ghi)perylene	100	1.1		0.18	0.026	0.058	J	0.16	0.023	0.78		0.17	0.025
Fluorene	100	0.16	J	0.22	0.021	ND		0.2	0.019	0.19	J	0.22	0.021
Phenanthrene	100	1.8		0.13	0.027	0.11	J	0.12	0.024	2.4		0.13	0.026
Dibenzo(a,h)anthracene	0.33	0.26		0.13	0.025	ND		0.12	0.023	0.21		0.13	0.025
Indeno(1,2,3-cd)pyrene	0.5	1		0.18	0.031	0.061	J	0.16	0.028	0.79		0.17	0.03
Pyrene	100	1.7		0.13	0.022	0.14		0.12	0.02	2.1		0.13	0.021
Biphenyl		ND		0.5	0.029	ND		0.46	0.026	0.11	J	0.49	0.028
4-Chloroaniline		ND		0.22	0.04	ND		0.2	0.036	ND		0.22	0.039
2-Nitroaniline		ND		0.22	0.042	ND		0.2	0.038	ND		0.22	0.042
3-Nitroaniline		ND		0.22	0.042	ND		0.2	0.038	ND		0.22	0.041
4-Nitroaniline		ND		0.22	0.091	ND		0.2	0.083	ND		0.22	0.089
Dibenzofuran	59	0.12	J	0.22	0.021	ND		0.2	0.019	0.29		0.22	0.02
2-Methylnaphthalene		ND		0.26	0.027	ND		0.24	0.024	0.49		0.26	0.026
1,2,4,5-Tetrachlorobenzene		ND		0.22	0.023	ND		0.2	0.021	ND		0.22	0.022
Acetophenone		ND		0.22	0.027	ND		0.2	0.025	0.13	J	0.22	0.027
2,4,6-Trichlorophenol		ND		0.13	0.042	ND		0.12	0.038	ND		0.13	0.041
p-Chloro-m-cresol		ND		0.22	0.033	ND		0.2	0.03	ND		0.22	0.032
2-Chlorophenol		ND		0.22	0.026	ND		0.2	0.024	ND		0.22	0.025
2,4-Dichlorophenol		ND		0.2	0.035	ND		0.18	0.032	ND		0.19	0.035
2,4-Dimethylphenol		ND		0.22	0.073	ND		0.2	0.066	ND		0.22	0.071
2-Nitrophenol		ND		0.48	0.083	ND		0.43	0.075	ND		0.46	0.081
4-Nitrophenol		ND		0.31	0.09	ND		0.28	0.081	ND		0.3	0.088
2,4-Dinitrophenol		ND		1	0.1	ND		0.96	0.093	ND		1	0.1
4,6-Dinitro-o-cresol		ND		0.57	0.1	ND		0.52	0.096	ND		0.56	0.1
Pentachlorophenol	6.7	ND		0.18	0.048	ND		0.16	0.044	ND		0.17	0.047
Phenol	100	ND		0.22	0.033	ND		0.2	0.03	ND		0.22	0.032
2-Methylphenol	100	ND		0.22	0.034	ND		0.2	0.031	ND		0.22	0.033
3-Methylphenol/4-Methylphenol	100	ND		0.32	0.034	ND		0.29	0.031	0.22	J	0.31	0.034
2,4,5-Trichlorophenol		ND		0.22	0.042	ND		0.2	0.038	ND		0.22	0.041
Benzoic Acid		ND		0.71	0.22	ND		0.65	0.2	0.46	J	0.7	0.22
Benzyl Alcohol		ND		0.22	0.067	ND		0.2	0.061	ND		0.22	0.066
Carbazole		0.18	J	0.22	0.021	ND		0.2	0.019	0.18	J	0.22	0.021
1,4-Dioxane	13	ND		0.033	0.01	ND		0.03	0.0092	ND		0.032	0.0099
Total SVOCs		15.92	-	-	-	1.019	-	-	-	19.08	-	-	-
POLYCHLORINATED BIPHENYLS BY GC													
Aroclor 1016	1	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1221	1	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1232	1	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1242	1	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	1	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	1	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	1	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1262	1	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1268	1	-	-	-	-	-	-	-	-	-	-	-	-
PCBs, Total	1	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL METALS													
Lead, Total	400	**688**		**2.56**	**0.137**	**557**		**2.41**	**0.129**	260		2.54	0.136
Mercury, Total	0.81	0.53		0.085	0.055	0.695		0.094	0.061	0.449		0.1	0.066
GENERAL CHEMISTRY													
Solids, Total		74.8		0.1	NA	81.6		0.1	NA	75.9		0.1	NA

Notes:

1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   - = Not Analyzed
   CAS = Chemical Abstracts Service Registry Number
   Conc = Concentration
   J = Indicates estimated value
   mg/kg = micrograms per kilogram
   MDL = Method detection limit
   ND = Not detected
   NS = No Standard
   NY-RESRR = New York NYCRR Part 375 Restricted-Residential Criteria, effe
   NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Res
   Q = Qualifier
   RL = Reporting limit
   Shaded yellow = Conc exceeds NY-RESRR
   Bold = Conc exceeds NY-RESGW
   Shaded gray = RL exceeds NY-RESRR or NY-RES
3. CSA#1-DUPLICATE parent sample is CSA#1-SW-5(4); DUPLICATE parent s

Table 2
Remaining Soil Sample Exceedances
NYSDEC Site Number: C360154
September 2023

SAMPLE ID:		CSA#1-BASE-1(6)				CSA#1-BASE-2(6)				CSA#2-SW-1(1.5)			
LAB ID:		L2355413-05				L2355829-04				L2355058-01			
COLLECTION DATE:	NY-RESRR	9/20/2023				9/21/2023				9/19/2023			
SAMPLE DEPTH (ft bgs):		6				6				1.5			
SAMPLE MATRIX:		SOIL				SOIL				SOIL			
ANALYTE	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS													
Acenaphthene	100	ND		0.17	0.022	0.38		0.2	0.026	0.94		0.8	0.1
1,2,4-Trichlorobenzene		ND		0.21	0.024	ND		0.25	0.029	ND		0.99	0.11
Hexachlorobenzene	1.2	ND		0.12	0.023	ND		0.15	0.028	ND		0.6	0.11
Bis(2-chloroethyl)ether		ND		0.19	0.028	ND		0.23	0.034	ND		0.9	0.13
2-Chloronaphthalene		ND		0.21	0.02	ND		0.25	0.025	ND		0.99	0.099
1,2-Dichlorobenzene	100	ND		0.21	0.037	ND		0.25	0.045	0.28	J	0.99	0.18
1,3-Dichlorobenzene	49	ND		0.21	0.036	ND		0.25	0.043	ND		0.99	0.17
1,4-Dichlorobenzene	13	ND		0.21	0.036	ND		0.25	0.044	ND		0.99	0.17
3,3'-Dichlorobenzidine		ND		0.21	0.055	ND		0.25	0.067	ND		0.99	0.26
2,4-Dinitrotoluene		ND		0.21	0.042	ND		0.25	0.05	ND		0.99	0.2
2,6-Dinitrotoluene		ND		0.21	0.036	ND		0.25	0.043	ND		0.99	0.17
Fluoranthene	100	1.5		0.12	0.024	1.6		0.15	0.029	10		0.6	0.11
4-Chlorophenyl phenyl ether		ND		0.21	0.022	ND		0.25	0.027	ND		0.99	0.11
4-Bromophenyl phenyl ether		ND		0.21	0.032	ND		0.25	0.038	ND		0.99	0.15
Bis(2-chloroisopropyl)ether		ND		0.25	0.035	ND		0.3	0.043	ND		1.2	0.17
Bis(2-chloroethoxy)methane		ND		0.22	0.021	ND		0.27	0.025	ND		1.1	0.1
Hexachlorobutadiene		ND		0.21	0.03	ND		0.25	0.037	ND		0.99	0.14
Hexachlorocyclopentadiene		ND		0.59	0.19	ND		0.72	0.23	ND		2.8	0.9
Hexachloroethane		ND		0.17	0.034	ND		0.2	0.041	ND		0.8	0.16
Isophorone		ND		0.19	0.027	ND		0.23	0.033	ND		0.9	0.13
Naphthalene	100	0.049	J	0.21	0.025	0.47		0.25	0.031	0.72	J	0.99	0.12
Nitrobenzene		ND		0.19	0.031	ND		0.23	0.037	ND		0.9	0.15
NDPA/DPA		ND		0.17	0.024	ND		0.2	0.029	ND		0.8	0.11
n-Nitrosodi-n-propylamine		ND		0.21	0.032	ND		0.25	0.039	ND		0.99	0.15
Bis(2-ethylhexyl)phthalate		ND		0.21	0.072	ND		0.25	0.087	ND		0.99	0.34
Butyl benzyl phthalate		ND		0.21	0.052	ND		0.25	0.064	ND		0.99	0.25
Di-n-butylphthalate		ND		0.21	0.039	ND		0.25	0.048	ND		0.99	0.19
Di-n-octylphthalate		ND		0.21	0.07	ND		0.25	0.086	ND		0.99	0.34
Diethyl phthalate		ND		0.21	0.019	ND		0.25	0.023	ND		0.99	0.092
Dimethyl phthalate		ND		0.21	0.044	ND		0.25	0.053	ND		0.99	0.21
Benzo(a)anthracene	1	**1.2**		**0.12**	**0.023**	0.88		0.15	0.028	**4**		**0.6**	**0.11**
Benzo(a)pyrene	1	1.4		0.17	0.051	0.9		0.2	0.062	4.4		0.8	0.24
Benzo(b)fluoranthene	1	1.4		0.12	0.035	1		0.15	0.042	**4.7**		**0.6**	**0.17**
Benzo(k)fluoranthene	3.9	0.38		0.12	0.033	0.37		0.15	0.04	1.7		0.6	0.16
Chrysene	3.9	**1.2**		**0.12**	**0.022**	0.96		0.15	0.026	**3.9**		**0.6**	**0.1**
Acenaphthylene	100	0.27		0.17	0.032	0.2		0.2	0.039	0.53	J	0.8	0.15
Anthracene	100	0.23		0.12	0.04	0.41		0.15	0.049	2.1		0.6	0.19
Benzo(ghi)perylene	100	0.86		0.17	0.024	0.61		0.2	0.03	2.5		0.8	0.12
Fluorene	100	0.043	J	0.21	0.02	0.35		0.25	0.024	0.84	J	0.99	0.097
Phenanthrene	100	0.78		0.12	0.025	1.5		0.15	0.031	9.7		0.6	0.12
Dibenzo(a,h)anthracene	0.33	0.16		0.12	0.024	0.14	J	0.15	0.029	0.51	J	0.6	0.11
Indeno(1,2,3-cd)pyrene	0.5	0.82		0.17	0.029	0.6		0.2	0.035	2.6		0.8	0.14
Pyrene	100	2		0.12	0.021	1.5		0.15	0.025	9.4		0.6	0.099
Biphenyl		ND		0.47	0.027	0.041	J	0.57	0.033	ND		2.3	0.13
4-Chloroaniline		ND		0.21	0.038	ND		0.25	0.046	ND		0.99	0.18
2-Nitroaniline		ND		0.21	0.04	ND		0.25	0.049	ND		0.99	0.19
3-Nitroaniline		ND		0.21	0.039	ND		0.25	0.048	ND		0.99	0.19
4-Nitroaniline		ND		0.21	0.086	ND		0.25	0.1	ND		0.99	0.41
Dibenzofuran	59	ND		0.21	0.02	0.18	J	0.25	0.024	0.6	J	0.99	0.094
2-Methylnaphthalene		ND		0.25	0.025	0.12	J	0.3	0.03	0.48	J	1.2	0.12
1,2,4,5-Tetrachlorobenzene		ND		0.21	0.022	ND		0.25	0.026	ND		0.99	0.1
Acetophenone		ND		0.21	0.026	ND		0.25	0.031	ND		0.99	0.12
2,4,6-Trichlorophenol		ND		0.12	0.039	ND		0.15	0.048	ND		0.6	0.19
p-Chloro-m-cresol		ND		0.21	0.031	ND		0.25	0.038	ND		0.99	0.15
2-Chlorophenol		ND		0.21	0.024	ND		0.25	0.03	ND		0.99	0.12
2,4-Dichlorophenol		ND		0.19	0.033	ND		0.23	0.04	ND		0.9	0.16
2,4-Dimethylphenol		ND		0.21	0.068	ND		0.25	0.083	ND		0.99	0.33
2-Nitrophenol		ND		0.45	0.078	ND		0.54	0.095	ND		2.1	0.37
4-Nitrophenol		ND		0.29	0.085	ND		0.35	0.1	ND		1.4	0.4
2,4-Dinitrophenol		ND		1	0.097	ND		1.2	0.12	ND		4.8	0.46
4,6-Dinitro-o-cresol		ND		0.54	0.1	ND		0.66	0.12	ND		2.6	0.48
Pentachlorophenol	6.7	ND		0.17	0.046	ND		0.2	0.055	ND		0.8	0.22
Phenol	100	ND		0.21	0.031	ND		0.25	0.038	ND		0.99	0.15
2-Methylphenol	100	ND		0.21	0.032	ND		0.25	0.039	ND		0.99	0.15
3-Methylphenol/4-Methylphenol	100	ND		0.3	0.032	**1.2**		**0.36**	**0.039**	ND		1.4	0.16
2,4,5-Trichlorophenol		ND		0.21	0.04	ND		0.25	0.048	ND		0.99	0.19
Benzoic Acid		ND		0.67	0.21	ND		0.82	0.26	ND		3.2	1
Benzyl Alcohol		ND		0.21	0.064	ND		0.25	0.077	ND		0.99	0.3
Carbazole		0.032	J	0.21	0.02	0.2	J	0.25	0.024	0.77	J	0.99	0.097
1,4-Dioxane	13	ND		0.031	0.0095	ND		0.038	0.012	ND		0.15	0.046
Total SVOCs		12.324	-	-	-	13.611	-	-	-	60.67	-	-	-
POLYCHLORINATED BIPHENYLS BY GC													
Aroclor 1016	1	-	-	-	-	-	-	-	-	ND		0.0579	0.00514
Aroclor 1221	1	-	-	-	-	-	-	-	-	ND		0.0579	0.0058
Aroclor 1232	1	-	-	-	-	-	-	-	-	ND		0.0579	0.0123
Aroclor 1242	1	-	-	-	-	-	-	-	-	ND		0.0579	0.00781
Aroclor 1248	1	-	-	-	-	-	-	-	-	ND		0.0579	0.00869
Aroclor 1254	1	-	-	-	-	-	-	-	-	0.00939	J	0.0579	0.00634
Aroclor 1260	1	-	-	-	-	-	-	-	-	0.0122	J	0.0579	0.0107
Aroclor 1262	1	-	-	-	-	-	-	-	-	ND		0.0579	0.00736
Aroclor 1268	1	-	-	-	-	-	-	-	-	ND		0.0579	0.006
PCBs, Total	1	-	-	-	-	-	-	-	-	0.0216	J	0.0579	0.00514
TOTAL METALS													
Lead, Total	400	40.4		2.42	0.13	194		3.07	0.164	12		2.38	0.128
Mercury, Total	0.81	0.125		0.078	0.051	0.848		0.118	0.077	-		-	-
GENERAL CHEMISTRY													
Solids, Total		80.2		0.1	NA	64		0.1	NA	83		0.1	NA

Notes:

1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   - = Not Analyzed
   CAS = Chemical Abstracts Service Registry Number
   Conc = Concentration
   J = Indicates estimated value
   mg/kg = micrograms per kilogram
   MDL = Method detection limit
   ND = Not detected
   NS = No Standard
   NY-RESRR = New York NYCRR Part 375 Restricted-Residential Criteria, eff
   NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Res
   Q = Qualifier
   RL = Reporting limit
   Shaded yellow = Conc exceeds NY-RESRR
   Bold = Conc exceeds NY-RESGW
   Shaded gray = RL exceeds NY-RESRR or NY-RES
3. CSA#1-DUPLICATE parent sample is CSA#1-SW-5(4); DUPLICATE parent

Table 2
Remaining Soil Sample Exceedances
NYSDEC Site Number: C360154
September 2023

SAMPLE ID:		CSA#2-SW-2(1.5)				CSA#2-SW-3(1.5)				CSA#2-SW-4(1.5)			
LAB ID:		L2355058-02				L2355058-04				L2355058-07			
COLLECTION DATE:	NY-RESRR	9/19/2023				9/19/2023				9/19/2023			
SAMPLE DEPTH (ft bgs):		1.5				1.5				1.5			
SAMPLE MATRIX:		SOIL				SOIL				SOIL			
ANALYTE	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS													
Acenaphthene	100	0.3		0.16	0.02	0.67	J	0.78	0.1	0.058	J	0.16	0.021
1,2,4-Trichlorobenzene		ND		0.19	0.022	ND		0.97	0.11	ND		0.21	0.024
Hexachlorobenzene	1.2	ND		0.12	0.022	ND		0.58	0.11	ND		0.12	0.023
Bis(2-chloroethyl)ether		ND		0.18	0.026	ND		0.88	0.13	ND		0.18	0.028
2-Chloronaphthalene		ND		0.19	0.019	ND		0.97	0.097	ND		0.21	0.02
1,2-Dichlorobenzene	100	0.066	J	0.19	0.035	1		0.97	0.17	ND		0.21	0.037
1,3-Dichlorobenzene	49	ND		0.19	0.033	0.22	J	0.97	0.17	ND		0.21	0.035
1,4-Dichlorobenzene	13	ND		0.19	0.034	**1.9**		**0.97**	**0.17**	ND		0.21	0.036
3,3'-Dichlorobenzidine		ND		0.19	0.052	ND		0.97	0.26	ND		0.21	0.055
2,4-Dinitrotoluene		ND		0.19	0.039	ND		0.97	0.19	ND		0.21	0.041
2,6-Dinitrotoluene		ND		0.19	0.033	ND		0.97	0.17	ND		0.21	0.035
Fluoranthene	100	6.3		0.12	0.022	9.7		0.58	0.11	1.9		0.12	0.024
4-Chlorophenyl phenyl ether		ND		0.19	0.021	ND		0.97	0.1	ND		0.21	0.022
4-Bromophenyl phenyl ether		ND		0.19	0.03	ND		0.97	0.15	ND		0.21	0.031
Bis(2-chloroisopropyl)ether		ND		0.23	0.033	ND		1.2	0.17	ND		0.25	0.035
Bis(2-chloroethoxy)methane		ND		0.21	0.019	ND		1	0.098	ND		0.22	0.021
Hexachlorobutadiene		ND		0.19	0.028	ND		0.97	0.14	ND		0.21	0.03
Hexachlorocyclopentadiene		ND		0.56	0.18	ND		2.8	0.88	ND		0.59	0.19
Hexachloroethane		ND		0.16	0.031	ND		0.78	0.16	ND		0.16	0.033
Isophorone		ND		0.18	0.025	ND		0.88	0.13	ND		0.18	0.027
Naphthalene	100	0.25		0.19	0.024	3.3		0.97	0.12	0.28		0.21	0.025
Nitrobenzene		ND		0.18	0.029	ND		0.88	0.14	ND		0.18	0.03
NDPA/DPA		ND		0.16	0.022	ND		0.78	0.11	ND		0.16	0.023
n-Nitrosodi-n-propylamine		ND		0.19	0.03	ND		0.97	0.15	ND		0.21	0.032
Bis(2-ethylhexyl)phthalate		ND		0.19	0.067	ND		0.97	0.34	ND		0.21	0.071
Butyl benzyl phthalate		ND		0.19	0.049	ND		0.97	0.24	ND		0.21	0.052
Di-n-butylphthalate		ND		0.19	0.037	ND		0.97	0.18	ND		0.21	0.039
Di-n-octylphthalate		ND		0.19	0.066	ND		0.97	0.33	ND		0.21	0.07
Diethyl phthalate		ND		0.19	0.018	ND		0.97	0.09	ND		0.21	0.019
Dimethyl phthalate		ND		0.19	0.041	ND		0.97	0.2	ND		0.21	0.043
Benzo(a)anthracene	1	**2.5**		**0.12**	**0.022**	4.7		0.58	0.11	0.93		0.12	0.023
Benzo(a)pyrene	1	2.6		0.16	0.047	5.8		0.78	0.24	1		0.16	0.05
Benzo(b)fluoranthene	1	**2.6**		**0.12**	**0.033**	6.2		0.58	0.16	1.2		0.12	0.035
Benzo(k)fluoranthene	3.9	0.88		0.12	0.031	2.2		0.58	0.16	0.39		0.12	0.033
Chrysene	3.9	**2.5**		**0.12**	**0.02**	4.7		0.58	0.1	**1.1**		**0.12**	**0.021**
Acenaphthylene	100	0.22		0.16	0.03	1.2		0.78	0.15	0.25		0.16	0.032
Anthracene	100	1.1		0.12	0.038	2		0.58	0.19	0.26		0.12	0.04
Benzo(ghi)perylene	100	1.7		0.16	0.023	3		0.78	0.11	0.68		0.16	0.024
Fluorene	100	0.31		0.19	0.019	0.72	J	0.97	0.095	0.082	J	0.21	0.02
Phenanthrene	100	4.6		0.12	0.024	6.7		0.58	0.12	1.2		0.12	0.025
Dibenzo(a,h)anthracene	0.33	0.33		0.12	0.022	0.74		0.58	0.11	0.14		0.12	0.024
Indeno(1,2,3-cd)pyrene	0.5	1.5		0.16	0.027	3.3		0.78	0.14	0.61		0.16	0.029
Pyrene	100	5.8		0.12	0.019	8.6		0.58	0.097	1.7		0.12	0.02
Biphenyl		0.059	J	0.44	0.025	0.22	J	2.2	0.13	0.038	J	0.47	0.027
4-Chloroaniline		ND		0.19	0.035	ND		0.97	0.18	ND		0.21	0.037
2-Nitroaniline		ND		0.19	0.037	ND		0.97	0.19	ND		0.21	0.04
3-Nitroaniline		ND		0.19	0.037	ND		0.97	0.18	ND		0.21	0.039
4-Nitroaniline		ND		0.19	0.08	ND		0.97	0.4	ND		0.21	0.085
Dibenzofuran	59	0.23		0.19	0.018	0.61	J	0.97	0.092	0.1	J	0.21	0.019
2-Methylnaphthalene		0.2	J	0.23	0.023	2.4		1.2	0.12	0.13	J	0.25	0.025
1,2,4,5-Tetrachlorobenzene		ND		0.19	0.02	ND		0.97	0.1	ND		0.21	0.022
Acetophenone		ND		0.19	0.024	ND		0.97	0.12	ND		0.21	0.026
2,4,6-Trichlorophenol		ND		0.12	0.037	ND		0.58	0.18	ND		0.12	0.039
p-Chloro-m-cresol		ND		0.19	0.029	ND		0.97	0.14	ND		0.21	0.031
2-Chlorophenol		ND		0.19	0.023	ND		0.97	0.12	ND		0.21	0.024
2,4-Dichlorophenol		ND		0.18	0.031	ND		0.88	0.16	ND		0.18	0.033
2,4-Dimethylphenol		ND		0.19	0.064	ND		0.97	0.32	ND		0.21	0.068
2-Nitrophenol		ND		0.42	0.073	ND		2.1	0.37	ND		0.44	0.077
4-Nitrophenol		ND		0.27	0.079	ND		1.4	0.4	ND		0.29	0.084
2,4-Dinitrophenol		ND		0.93	0.091	ND		4.7	0.45	ND		0.99	0.096
4,6-Dinitro-o-cresol		ND		0.5	0.093	ND		2.5	0.47	ND		0.54	0.099
Pentachlorophenol	6.7	ND		0.16	0.043	ND		0.78	0.21	ND		0.16	0.045
Phenol	100	ND		0.19	0.029	ND		0.97	0.15	ND		0.21	0.031
2-Methylphenol	100	ND		0.19	0.03	ND		0.97	0.15	ND		0.21	0.032
3-Methylphenol/4-Methylphenol	100	ND		0.28	0.03	0.16	J	1.4	0.15	0.044	J	0.3	0.032
2,4,5-Trichlorophenol		ND		0.19	0.037	ND		0.97	0.19	ND		0.21	0.039
Benzoic Acid		ND		0.63	0.2	ND		3.2	0.98	ND		0.67	0.21
Benzyl Alcohol		ND		0.19	0.06	ND		0.97	0.3	ND		0.21	0.063
Carbazole		0.29		0.19	0.019	0.67	J	0.97	0.095	0.16	J	0.21	0.02
1,4-Dioxane	13	ND		0.029	0.0089	ND		0.15	0.045	ND		0.031	0.0095
Total SVOCs		34.335	-	-	-	70.71	-	-	-	12.252	-	-	-
POLYCHLORINATED BIPHENYLS BY GC													
Aroclor 1016	1	ND		0.0582	0.00517	ND		0.0575	0.0051	ND		0.0582	0.00517
Aroclor 1221	1	ND		0.0582	0.00584	ND		0.0575	0.00576	ND		0.0582	0.00583
Aroclor 1232	1	ND		0.0582	0.0123	ND		0.0575	0.0122	ND		0.0582	0.0123
Aroclor 1242	1	ND		0.0582	0.00785	ND		0.0575	0.00775	ND		0.0582	0.00785
Aroclor 1248	1	ND		0.0582	0.00874	ND		0.0575	0.00862	ND		0.0582	0.00873
Aroclor 1254	1	0.00935	J	0.0582	0.00637	0.0272	J	0.0575	0.00629	ND		0.0582	0.00637
Aroclor 1260	1	ND		0.0582	0.0108	0.0202	J	0.0575	0.0106	ND		0.0582	0.0108
Aroclor 1262	1	ND		0.0582	0.0074	ND		0.0575	0.0073	ND		0.0582	0.00739
Aroclor 1268	1	ND		0.0582	0.00603	ND		0.0575	0.00595	ND		0.0582	0.00603
PCBs, Total	1	0.00935	J	0.0582	0.00517	0.0474	J	0.0575	0.0051	ND		0.0582	0.00517
TOTAL METALS													
Lead, Total	400	64.5		2.35	0.126	206		2.29	0.123	262		2.46	0.132
Mercury, Total	0.81	-		-	-	-		-	-	-		-	-
GENERAL CHEMISTRY													
Solids, Total		84.5		0.1	NA	84.7		0.1	NA	79.6		0.1	NA

Notes:

1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   - = Not Analyzed
   CAS = Chemical Abstracts Service Registry Number
   Conc = Concentration
   J = Indicates estimated value
   mg/kg = micrograms per kilogram
   MDL = Method detection limit
   ND = Not detected
   NS = No Standard
   NY-RESRR = New York NYCRR Part 375 Restricted-Residential Criteria, effe
   NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Res
   Q = Qualifier
   RL = Reporting limit
   Shaded yellow = Conc exceeds NY-RESRR
   Bold = Conc exceeds NY-RESGW
   Shaded gray = RL exceeds NY-RESRR or NY-RES
3. CSA#1-DUPLICATE parent sample is CSA#1-SW-5(4); DUPLICATE parent

Table 2
Remaining Soil Sample Exceedances
NYSDEC Site Number: C360154
September 2023

SAMPLE ID:		CSA#2-SW-5(1.5)				CSA#2-SW-6(1.5)				CSA#2-SW-7(1.5)			
LAB ID:		L2355058-08				L2355829-01				L2355829-02			
COLLECTION DATE:	NY-RESRR	9/19/2023				9/21/2023				9/21/2023			
SAMPLE DEPTH (ft bgs):		1.5				1.5				1.5			
SAMPLE MATRIX:		SOIL				SOIL				SOIL			
ANALYTE	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS													
Acenaphthene	100	ND		0.15	0.02	ND		0.14	0.018	ND		0.14	0.018
1,2,4-Trichlorobenzene		ND		0.19	0.022	ND		0.18	0.02	ND		0.18	0.02
Hexachlorobenzene	1.2	ND		0.11	0.021	ND		0.11	0.02	ND		0.1	0.02
Bis(2-chloroethyl)ether		ND		0.17	0.026	ND		0.16	0.024	ND		0.16	0.024
2-Chloronaphthalene		ND		0.19	0.019	ND		0.18	0.018	ND		0.18	0.017
1,2-Dichlorobenzene	100	ND		0.19	0.034	ND		0.18	0.032	ND		0.18	0.032
1,3-Dichlorobenzene	49	ND		0.19	0.033	ND		0.18	0.031	ND		0.18	0.03
1,4-Dichlorobenzene	13	ND		0.19	0.033	ND		0.18	0.031	ND		0.18	0.031
3,3'-Dichlorobenzidine		ND		0.19	0.051	ND		0.18	0.047	ND		0.18	0.047
2,4-Dinitrotoluene		ND		0.19	0.038	ND		0.18	0.036	ND		0.18	0.035
2,6-Dinitrotoluene		ND		0.19	0.033	ND		0.18	0.031	ND		0.18	0.03
Fluoranthene	100	0.64		0.11	0.022	ND		0.11	0.02	ND		0.1	0.02
4-Chlorophenyl phenyl ether		ND		0.19	0.02	ND		0.18	0.019	ND		0.18	0.019
4-Bromophenyl phenyl ether		ND		0.19	0.029	ND		0.18	0.027	ND		0.18	0.027
Bis(2-chloroisopropyl)ether		ND		0.23	0.032	ND		0.21	0.03	ND		0.21	0.03
Bis(2-chloroethoxy)methane		ND		0.2	0.019	ND		0.19	0.018	ND		0.19	0.018
Hexachlorobutadiene		ND		0.19	0.028	ND		0.18	0.026	ND		0.18	0.026
Hexachlorocyclopentadiene		ND		0.54	0.17	ND		0.51	0.16	ND		0.5	0.16
Hexachloroethane		ND		0.15	0.031	ND		0.14	0.029	ND		0.14	0.028
Isophorone		ND		0.17	0.025	ND		0.16	0.023	ND		0.16	0.023
Naphthalene	100	0.13	J	0.19	0.023	ND		0.18	0.022	ND		0.18	0.021
Nitrobenzene		ND		0.17	0.028	ND		0.16	0.026	ND		0.16	0.026
NDPA/DPA		ND		0.15	0.022	ND		0.14	0.02	ND		0.14	0.02
n-Nitrosodi-n-propylamine		ND		0.19	0.029	ND		0.18	0.028	ND		0.18	0.027
Bis(2-ethylhexyl)phthalate		ND		0.19	0.066	ND		0.18	0.062	ND		0.18	0.061
Butyl benzyl phthalate		ND		0.19	0.048	ND		0.18	0.045	ND		0.18	0.044
Di-n-butylphthalate		ND		0.19	0.036	ND		0.18	0.034	ND		0.18	0.033
Di-n-octylphthalate		ND		0.19	0.065	ND		0.18	0.061	ND		0.18	0.06
Diethyl phthalate		ND		0.19	0.018	ND		0.18	0.016	ND		0.18	0.016
Dimethyl phthalate		ND		0.19	0.04	ND		0.18	0.037	ND		0.18	0.037
Benzo(a)anthracene	1	0.37		0.11	0.021	ND		0.11	0.02	ND		0.1	0.02
Benzo(a)pyrene	1	0.38		0.15	0.046	ND		0.14	0.044	ND		0.14	0.043
Benzo(b)fluoranthene	1	0.45		0.11	0.032	ND		0.11	0.03	ND		0.1	0.03
Benzo(k)fluoranthene	3.9	0.14		0.11	0.03	ND		0.11	0.028	ND		0.1	0.028
Chrysene	3.9	0.39		0.11	0.02	ND		0.11	0.018	ND		0.1	0.018
Acenaphthylene	100	0.09	J	0.15	0.029	ND		0.14	0.028	ND		0.14	0.027
Anthracene	100	0.13		0.11	0.037	ND		0.11	0.035	ND		0.1	0.034
Benzo(ghi)perylene	100	0.26		0.15	0.022	ND		0.14	0.021	ND		0.14	0.021
Fluorene	100	ND		0.19	0.018	ND		0.18	0.017	ND		0.18	0.017
Phenanthrene	100	0.48		0.11	0.023	ND		0.11	0.022	ND		0.1	0.021
Dibenzo(a,h)anthracene	0.33	0.052	J	0.11	0.022	ND		0.11	0.021	ND		0.1	0.02
Indeno(1,2,3-cd)pyrene	0.5	0.21		0.15	0.026	ND		0.14	0.025	ND		0.14	0.024
Pyrene	100	0.56		0.11	0.019	ND		0.11	0.018	ND		0.1	0.018
Biphenyl		ND		0.43	0.025	ND		0.41	0.023	ND		0.4	0.023
4-Chloroaniline		ND		0.19	0.035	ND		0.18	0.032	ND		0.18	0.032
2-Nitroaniline		ND		0.19	0.037	ND		0.18	0.034	ND		0.18	0.034
3-Nitroaniline		ND		0.19	0.036	ND		0.18	0.034	ND		0.18	0.033
4-Nitroaniline		ND		0.19	0.079	ND		0.18	0.074	ND		0.18	0.073
Dibenzofuran	59	0.057	J	0.19	0.018	ND		0.18	0.017	ND		0.18	0.017
2-Methylnaphthalene		0.071	J	0.23	0.023	ND		0.21	0.022	ND		0.21	0.021
1,2,4,5-Tetrachlorobenzene		ND		0.19	0.02	ND		0.18	0.019	ND		0.18	0.018
Acetophenone		ND		0.19	0.024	ND		0.18	0.022	ND		0.18	0.022
2,4,6-Trichlorophenol		ND		0.11	0.036	ND		0.11	0.034	ND		0.1	0.033
p-Chloro-m-cresol		ND		0.19	0.028	ND		0.18	0.027	ND		0.18	0.026
2-Chlorophenol		ND		0.19	0.022	ND		0.18	0.021	ND		0.18	0.021
2,4-Dichlorophenol		ND		0.17	0.031	ND		0.16	0.029	ND		0.16	0.028
2,4-Dimethylphenol		ND		0.19	0.063	ND		0.18	0.059	ND		0.18	0.058
2-Nitrophenol		ND		0.41	0.072	ND		0.38	0.067	ND		0.38	0.066
4-Nitrophenol		ND		0.27	0.078	ND		0.25	0.073	ND		0.25	0.072
2,4-Dinitrophenol		ND		0.91	0.089	ND		0.86	0.083	ND		0.84	0.082
4,6-Dinitro-o-cresol		ND		0.5	0.091	ND		0.46	0.086	ND		0.46	0.084
Pentachlorophenol	6.7	ND		0.15	0.042	ND		0.14	0.039	ND		0.14	0.039
Phenol	100	ND		0.19	0.029	ND		0.18	0.027	ND		0.18	0.026
2-Methylphenol	100	ND		0.19	0.03	ND		0.18	0.028	ND		0.18	0.027
3-Methylphenol/4-Methylphenol	100	ND		0.27	0.03	ND		0.26	0.028	ND		0.25	0.028
2,4,5-Trichlorophenol		ND		0.19	0.036	ND		0.18	0.034	ND		0.18	0.034
Benzoic Acid		ND		0.62	0.19	ND		0.58	0.18	ND		0.57	0.18
Benzyl Alcohol		ND		0.19	0.058	ND		0.18	0.055	ND		0.18	0.054
Carbazole		0.052	J	0.19	0.018	ND		0.18	0.017	ND		0.18	0.017
1,4-Dioxane	13	ND		0.028	0.0088	ND		0.027	0.0082	ND		0.026	0.0081
Total SVOCs		4.462	-	-	-	-	-	-	-	-	-	-	-
POLYCHLORINATED BIPHENYLS BY GC													
Aroclor 1016	1	ND		0.0552	0.0049	ND		0.0535	0.00475	ND		0.0532	0.00472
Aroclor 1221	1	ND		0.0552	0.00553	ND		0.0535	0.00536	ND		0.0532	0.00533
Aroclor 1232	1	ND		0.0552	0.0117	ND		0.0535	0.0113	ND		0.0532	0.0113
Aroclor 1242	1	ND		0.0552	0.00744	ND		0.0535	0.00721	ND		0.0532	0.00717
Aroclor 1248	1	ND		0.0552	0.00828	ND		0.0535	0.00802	ND		0.0532	0.00798
Aroclor 1254	1	ND		0.0552	0.00604	ND		0.0535	0.00585	ND		0.0532	0.00582
Aroclor 1260	1	ND		0.0552	0.0102	ND		0.0535	0.00988	ND		0.0532	0.00983
Aroclor 1262	1	ND		0.0552	0.00701	ND		0.0535	0.00679	ND		0.0532	0.00676
Aroclor 1268	1	ND		0.0552	0.00572	ND		0.0535	0.00554	ND		0.0532	0.00551
PCBs, Total	1	ND		0.0552	0.0049	ND		0.0535	0.00475	ND		0.0532	0.00472
TOTAL METALS													
Lead, Total	400	316		2.26	0.121	9.82		2.13	0.114	5.54		2.08	0.111
Mercury, Total	0.81	-		-	-	-		-	-	-		-	-
GENERAL CHEMISTRY													
Solids, Total		87.1		0.1	NA	91.6		0.1	NA	92.7		0.1	NA

Notes:

1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   - = Not Analyzed
   CAS = Chemical Abstracts Service Registry Number
   Conc = Concentration
   J = Indicates estimated value
   mg/kg = micrograms per kilogram
   MDL = Method detection limit
   ND = Not detected
   NS = No Standard
   NY-RESRR = New York NYCRR Part 375 Restricted-Residential Criteria, eff
   NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Res
   Q = Qualifier
   RL = Reporting limit
   Shaded yellow = Conc exceeds NY-RESRR
   Bold = Conc exceeds NY-RESGW
   Shaded gray = RL exceeds NY-RESRR or NY-RES
3. CSA#1-DUPLICATE parent sample is CSA#1-SW-5(4); DUPLICATE parent

Table 2
Remaining Soil Sample Exceedances
NYSDEC Site Number: C360154
September 2023

SAMPLE ID:		CSA#2-BASE-1(2)				DUPLICATE				CSA#2-BASE-2(4)			
LAB ID:		L2355058-03				L2355058-05				L2355829-03			
COLLECTION DATE:	NY-RESRR	9/19/2023				9/19/2023				9/21/2023			
SAMPLE DEPTH (ft bgs):		2				2				4			
SAMPLE MATRIX:		SOIL				SOIL				SOIL			
ANALYTE	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS													
Acenaphthene	100	0.38	J	0.74	0.096	2.1		1.6	0.21	0.35		0.17	0.022
1,2,4-Trichlorobenzene		ND		0.93	0.11	ND		2	0.23	ND		0.21	0.024
Hexachlorobenzene	1.2	ND		0.56	0.1	ND		1.2	0.22	ND		0.13	0.024
Bis(2-chloroethyl)ether		ND		0.84	0.13	ND		1.8	0.27	ND		0.19	0.028
2-Chloronaphthalene		ND		0.93	0.092	ND		2	0.2	ND		0.21	0.021
1,2-Dichlorobenzene	100	0.32	J	0.93	0.17	**2**		**2**	**0.36**	ND		0.21	0.038
1,3-Dichlorobenzene	49	ND		0.93	0.16	0.47	J	2	0.34	ND		0.21	0.036
1,4-Dichlorobenzene	13	0.81	J	0.93	0.16	**4.7**		**2**	**0.35**	ND		0.21	0.037
3,3'-Dichlorobenzidine		ND		0.93	0.25	ND		2	0.53	ND		0.21	0.056
2,4-Dinitrotoluene		ND		0.93	0.19	ND		2	0.4	ND		0.21	0.042
2,6-Dinitrotoluene		ND		0.93	0.16	ND		2	0.34	ND		0.21	0.036
Fluoranthene	100	10		0.56	0.11	20		1.2	0.23	3		0.13	0.024
4-Chlorophenyl phenyl ether		ND		0.93	0.1	ND		2	0.21	ND		0.21	0.022
4-Bromophenyl phenyl ether		ND		0.93	0.14	ND		2	0.3	ND		0.21	0.032
Bis(2-chloroisopropyl)ether		ND		1.1	0.16	ND		2.4	0.34	ND		0.25	0.036
Bis(2-chloroethoxy)methane		ND		1	0.093	ND		2.2	0.2	ND		0.23	0.021
Hexachlorobutadiene		ND		0.93	0.14	ND		2	0.29	ND		0.21	0.031
Hexachlorocyclopentadiene		ND		2.7	0.84	ND		5.7	1.8	ND		0.6	0.19
Hexachloroethane		ND		0.74	0.15	ND		1.6	0.32	ND		0.17	0.034
Isophorone		ND		0.84	0.12	ND		1.8	0.26	ND		0.19	0.027
Naphthalene	100	1.4		0.93	0.11	4.3		2	0.24	0.38		0.21	0.026
Nitrobenzene		ND		0.84	0.14	ND		1.8	0.3	ND		0.19	0.031
NDPA/DPA		ND		0.74	0.1	ND		1.6	0.23	ND		0.17	0.024
n-Nitrosodi-n-propylamine		ND		0.93	0.14	ND		2	0.31	ND		0.21	0.032
Bis(2-ethylhexyl)phthalate		ND		0.93	0.32	ND		2	0.69	ND		0.21	0.073
Butyl benzyl phthalate		ND		0.93	0.23	ND		2	0.5	ND		0.21	0.053
Di-n-butylphthalate		ND		0.93	0.18	ND		2	0.38	ND		0.21	0.04
Di-n-octylphthalate		ND		0.93	0.32	ND		2	0.68	ND		0.21	0.072
Diethyl phthalate		ND		0.93	0.086	ND		2	0.18	ND		0.21	0.019
Dimethyl phthalate		ND		0.93	0.2	ND		2	0.42	ND		0.21	0.044
Benzo(a)anthracene	1	**5.4**		**0.56**	**0.1**	**8.9**		**1.2**	**0.22**	**1.8**		**0.13**	**0.024**
Benzo(a)pyrene	1	5.4		0.74	0.23	9.2		1.6	0.49	1.6		0.17	0.051
Benzo(b)fluoranthene	1	**5.6**		**0.56**	**0.16**	**10**		**1.2**	**0.34**	**1.9**		**0.13**	**0.035**
Benzo(k)fluoranthene	3.9	**2.2**		**0.56**	**0.15**	**3.5**		**1.2**	**0.32**	0.53		0.13	0.034
Chrysene	3.9	**4.9**		**0.56**	**0.097**	**8.4**		**1.2**	**0.21**	**1.9**		**0.13**	**0.022**
Acenaphthylene	100	1.6		0.74	0.14	1.2	J	1.6	0.31	0.18		0.17	0.032
Anthracene	100	2.9		0.56	0.18	4.8		1.2	0.39	0.84		0.13	0.041
Benzo(ghi)perylene	100	2.3		0.74	0.11	4.4		1.6	0.24	0.91		0.17	0.025
Fluorene	100	1		0.93	0.09	2.1		2	0.19	0.36		0.21	0.02
Phenanthrene	100	8.5		0.56	0.11	18		1.2	0.24	3.2		0.13	0.026
Dibenzo(a,h)anthracene	0.33	0.68		0.56	0.11	1.1	J	1.2	0.23	0.22		0.13	0.024
Indeno(1,2,3-cd)pyrene	0.5	2.8		0.74	0.13	5		1.6	0.28	0.98		0.17	0.029
Pyrene	100	9.4		0.56	0.092	17		1.2	0.2	2.8		0.13	0.021
Biphenyl		0.2	J	2.1	0.12	0.41	J	4.6	0.26	0.058	J	0.48	0.027
4-Chloroaniline		ND		0.93	0.17	ND		2	0.36	ND		0.21	0.038
2-Nitroaniline		ND		0.93	0.18	ND		2	0.39	ND		0.21	0.04
3-Nitroaniline		ND		0.93	0.18	ND		2	0.38	ND		0.21	0.04
4-Nitroaniline		ND		0.93	0.38	ND		2	0.83	ND		0.21	0.087
Dibenzofuran	59	0.9	J	0.93	0.088	1.5	J	2	0.19	0.27		0.21	0.02
2-Methylnaphthalene		0.76	J	1.1	0.11	2.3	J	2.4	0.24	0.2	J	0.25	0.025
1,2,4,5-Tetrachlorobenzene		ND		0.93	0.097	ND		2	0.21	ND		0.21	0.022
Acetophenone		ND		0.93	0.12	ND		2	0.25	ND		0.21	0.026
2,4,6-Trichlorophenol		ND		0.56	0.18	ND		1.2	0.38	ND		0.13	0.04
p-Chloro-m-cresol		ND		0.93	0.14	ND		2	0.3	ND		0.21	0.031
2-Chlorophenol		ND		0.93	0.11	ND		2	0.24	ND		0.21	0.025
2,4-Dichlorophenol		ND		0.84	0.15	ND		1.8	0.32	ND		0.19	0.034
2,4-Dimethylphenol		ND		0.93	0.31	ND		2	0.66	ND		0.21	0.069
2-Nitrophenol		ND		2	0.35	ND		4.3	0.75	ND		0.45	0.079
4-Nitrophenol		ND		1.3	0.38	ND		2.8	0.82	ND		0.29	0.086
2,4-Dinitrophenol		ND		4.5	0.43	ND		9.6	0.93	ND		1	0.098
4,6-Dinitro-o-cresol		ND		2.4	0.45	ND		5.2	0.96	ND		0.55	0.1
Pentachlorophenol	6.7	ND		0.74	0.2	ND		1.6	0.44	ND		0.17	0.046
Phenol	100	0.14	J	0.93	0.14	ND		2	0.3	ND		0.21	0.032
2-Methylphenol	100	ND		0.93	0.14	ND		2	0.31	ND		0.21	0.032
3-Methylphenol/4-Methylphenol	100	0.24	J	1.3	0.14	0.33	J	2.9	0.31	0.16	J	0.3	0.033
2,4,5-Trichlorophenol		ND		0.93	0.18	ND		2	0.38	ND		0.21	0.04
Benzoic Acid		ND		3	0.94	ND		6.5	2	ND		0.68	0.21
Benzyl Alcohol		ND		0.93	0.28	ND		2	0.61	ND		0.21	0.064
Carbazole		0.44	J	0.93	0.09	1.8	J	2	0.19	0.3		0.21	0.02
1,4-Dioxane	13	ND		0.14	0.043	ND		0.3	0.092	ND		0.032	0.0097
Total SVOCs		68.27	-	-	-	133.51	-	-	-	21.938	-	-	-
POLYCHLORINATED BIPHENYLS BY GC													
Aroclor 1016	1	ND		0.0557	0.00495	ND		0.0585	0.0052	ND		0.0596	0.0053
Aroclor 1221	1	ND		0.0557	0.00558	ND		0.0585	0.00586	ND		0.0596	0.00598
Aroclor 1232	1	ND		0.0557	0.0118	ND		0.0585	0.0124	ND		0.0596	0.0126
Aroclor 1242	1	ND		0.0557	0.00751	ND		0.0585	0.00789	ND		0.0596	0.00804
Aroclor 1248	1	ND		0.0557	0.00836	ND		0.0585	0.00878	ND		0.0596	0.00894
Aroclor 1254	1	0.00702	J	0.0557	0.0061	0.00796	J	0.0585	0.0064	ND		0.0596	0.00652
Aroclor 1260	1	ND		0.0557	0.0103	ND		0.0585	0.0108	ND		0.0596	0.011
Aroclor 1262	1	ND		0.0557	0.00708	ND		0.0585	0.00743	ND		0.0596	0.00757
Aroclor 1268	1	ND		0.0557	0.00577	ND		0.0585	0.00606	ND		0.0596	0.00618
PCBs, Total	1	0.00702	J	0.0557	0.00495	0.00796	J	0.0585	0.0052	ND		0.0596	0.0053
TOTAL METALS													
Lead, Total	400	155		2.21	0.118	**916**		**2.35**	**0.126**	4.04		2.49	0.133
Mercury, Total	0.81	-		-	-	-		-	-	-		-	-
GENERAL CHEMISTRY													
Solids, Total		87.1		0.1	NA	82.6		0.1	NA	78.8		0.1	NA

Notes:

1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   - = Not Analyzed
   CAS = Chemical Abstracts Service Registry Number
   Conc = Concentration
   J = Indicates estimated value
   mg/kg = micrograms per kilogram
   MDL = Method detection limit
   ND = Not detected
   NS = No Standard
   NY-RESRR = New York NYCRR Part 375 Restricted-Residential Criteria, eff
   NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Re
   Q = Qualifier
   RL = Reporting limit

   Shaded yellow = Conc exceeds NY-RESRR

   Bold = Conc exceeds NY-RESGW

   Shaded gray = RL exceeds NY-RESRR or NY-RE
3. CSA#1-DUPLICATE parent sample is CSA#1-SW-5(4); DUPLICATE parent

TABLE 3

Emerging Contaminant Soil Sample Results

Table 3
Emerging Contaminant Soil Sample Results
NYSDEC Site Number: C360154
April 2023

SAMPLE ID:		SB-1				SB-2				SB-201			
LAB ID:		L2320823-01				L2320823-02				L2320823-08			
COLLECTION DATE:	CAS	4/18/2023				4/18/2023				4/18/2023			
SAMPLE DEPTH:													
SAMPLE MATRIX:		SOIL				SOIL				SOIL			
ANALYTE		Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
PERFLUORINATED ALKYL ACIDS BY EPA 1633													
Perfluorobutanoic Acid (PFBA)	375-22-4	ND		0.000793	0.00005	ND		0.000787	0.00005	ND		0.000795	0.00005
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ND		0.000396	0.000056	ND		0.000393	0.000055	ND		0.000397	0.000056
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ND		0.000198	0.000043	0.000063	JF	0.000197	0.000043	ND		0.000199	0.000043
Perfluorohexanoic Acid (PFHxA)	307-24-4	ND		0.000198	0.000046	ND		0.000197	0.000046	ND		0.000199	0.000046
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ND		0.000198	0.000023	ND		0.000197	0.000023	ND		0.000199	0.000023
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ND		0.000198	0.000059	ND		0.000197	0.000058	ND		0.000199	0.000059
Perfluorooctanoic Acid (PFOA)	335-67-1	ND		0.000198	0.000052	0.000212		0.000197	0.000051	ND		0.000199	0.000052
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2	27619-97-2	ND		0.000793	0.000278	ND		0.000787	0.000275	ND		0.000795	0.000278
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ND		0.000198	0.000037	ND		0.000197	0.000036	ND		0.000199	0.000037
Perfluorononanoic Acid (PFNA)	375-95-1	ND		0.000198	0.000078	ND		0.000197	0.000077	ND		0.000199	0.000078
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.00023	F	0.000198	0.000079	0.000157	J	0.000197	0.000078	ND		0.000199	0.000079
Perfluorodecanoic Acid (PFDA)	335-76-2	ND		0.000198	0.000075	ND		0.000197	0.000074	ND		0.000199	0.000075
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2	39108-34-4	ND		0.000793	0.000384	ND		0.000787	0.000381	ND		0.000795	0.000385
N-Methyl Perfluorooctanesulfonamidoacetic Aci	2355-31-9	ND		0.000198	0.000099	ND		0.000197	0.000098	ND		0.000199	0.000099
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ND		0.000198	0.000051	ND		0.000197	0.00005	ND		0.000199	0.000051
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ND		0.000198	0.000032	ND		0.000197	0.000032	ND		0.000199	0.000032
Perfluorooctanesulfonamide (PFOSA)	754-91-6	ND		0.000198	0.000043	ND		0.000197	0.000043	ND		0.000199	0.000043
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	2991-50-6	ND		0.000198	0.000082	ND		0.000197	0.000081	ND		0.000199	0.000082
Perfluorododecanoic Acid (PFDoA)	307-55-1	ND		0.000198	0.00004	ND		0.000197	0.00004	ND		0.000199	0.000041
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ND		0.000198	0.000052	ND		0.000197	0.000052	ND		0.000199	0.000053
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7	ND		0.000198	0.000105	ND		0.000197	0.000105	ND		0.000199	0.000106
PFOA/PFOS, Total		0.00023		0.000198	0.000052	0.000369	J	0.000197	0.000051	ND		0.000199	0.000052
GENERAL CHEMISTRY													
Solids, Total	NONE	83.5		0.1	NA	87.5		0.1	NA	88.9		0.1	NA

Notes:

1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   CAS = Chemical Abstracts Service Registry Number
   Conc = Concentration
   J = Indicates estimated value
   mg/kg = micrograms per kilogram
   MDL = Method detection limit
   ND = Not detected
   NS = No Standard
   Q = Qualifier
   RL = Reporting limit
3. CSA#1-DUPLICATE parent sample is CSA#1-SW-5(4); DUPLICATE parent sample is CSA#2-BASE-1(2)

Table 4

Remaining Groundwater Sample Exceedances

Table 4
Remaining Groundwater Sample Exceedances
NYSDEC Site Number: C360154
April 2023

SAMPLE ID:	CAS	NY-AWQS	TW-1				TW-101				TW-2			
LAB ID:			L2320823-05				L2320823-06				L2320823-07			
COLLECTION DATE:			4/18/2023				4/18/2023				4/18/2023			
SAMPLE DEPTH (FT BGS):			10				10				10			
SAMPLE MATRIX:			WATER				WATER				WATER			
ANALYTE		(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
PERFLUORINATED ALKYL ACIDS BY EPA 1633														
Perfluorobutanoic Acid (PFBA)	375-22-4		0.00758		0.00652	0.00104	0.00775		0.00608	0.000972	0.00633	J	0.00676	0.00108
Perfluoropentanoic Acid (PFPeA)	2706-90-3		0.00285	JF	0.00326	0.000872	0.00296	JF	0.00304	0.000813	0.00557	F	0.00338	0.000904
Perfluorobutanesulfonic Acid (PFBS)	375-73-5		0.00179		0.00163	0.000546	0.00175		0.00152	0.000509	0.00144	J	0.00169	0.000566
Perfluorohexanoic Acid (PFHxA)	307-24-4		0.00277		0.00163	0.000481	0.00304		0.00152	0.000448	0.00448		0.00169	0.000498
Perfluoroheptanoic Acid (PFHpA)	375-85-9		0.00179		0.00163	0.000326	0.00182		0.00152	0.000304	0.00253		0.00169	0.000338
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4		0.00147	J	0.00163	0.000391	0.00137	J	0.00152	0.000365	0.00076	J	0.00169	0.000405
Perfluorooctanoic Acid (PFOA)	335-67-1	0.0067	0.0088		0.00163	0.000709	0.00843		0.00152	0.000661	0.00659		0.00169	0.000735
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2		0.0116		0.00652	0.0022	0.00744		0.00608	0.00205	0.0367		0.00676	0.00228
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8		ND		0.00163	0.00044	ND		0.00152	0.00041	ND		0.00169	0.000456
Perfluorononanoic Acid (PFNA)	375-95-1		ND		0.00163	0.000513	ND		0.00152	0.000479	ND		0.00169	0.000532
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.0027	0.00171		0.00163	0.000742	0.00243		0.00152	0.000691	0.00169		0.00169	0.000768
Perfluorodecanoic Acid (PFDA)	335-76-2		ND		0.00163	0.00066	ND		0.00152	0.000615	ND		0.00169	0.000684
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4		ND		0.00652	0.00253	ND		0.00608	0.00236	ND		0.00676	0.00263
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9		ND		0.00163	0.000888	ND		0.00152	0.000828	ND		0.00169	0.00092
Perfluoroundecanoic Acid (PFUnA)	2058-94-8		ND		0.00163	0.000709	ND		0.00152	0.000661	ND		0.00169	0.000735
Perfluorodecanesulfonic Acid (PFDS)	335-77-3		ND		0.00163	0.000375	ND		0.00152	0.000349	ND		0.00169	0.000388
Perfluorooctanesulfonamide (PFOSA)	754-91-6		ND		0.00163	0.00044	ND		0.00152	0.00041	ND		0.00169	0.000456
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6		ND		0.00163	0.00088	ND		0.00152	0.00082	ND		0.00169	0.000912
Perfluorododecanoic Acid (PFDoA)	307-55-1		ND		0.00163	0.00075	ND		0.00152	0.000699	ND		0.00169	0.000777
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8		ND		0.00163	0.000611	ND		0.00152	0.00057	ND		0.00169	0.000633
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7		ND		0.00163	0.000432	ND		0.00152	0.000403	ND		0.00169	0.000448
PFOA/PFOS, Total			0.0105		0.00163	0.000709	0.0109		0.00152	0.000661	0.00828		0.00169	0.000735

Notes:

1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   - Conc = Concentration
   - F = Estimated maximum concentration
   - Ft bgs = Feet below ground surface
   - J = Indicates estimated value
   - MDL = Method detection limit
   - ND = Not detected
   - NY-AWQS: New York TOGS 111 Ambient Water Quality Standards & Guidance Values Criteria per Standards & Guidance Values including all addenda through February 2023.
   - Q = Qualifier
   - RL = Reporting limit
   - ug/l= micrograms per liter
   - Shaded yellow = Conc. Exceeds NY-AWQS
3. TW-101 parent sample is TW-1

TABLE 5

Remaining Soil Vapor Sample Exceedances

Table 5
Soil Vapor Results
NYSDEC Site Number: C360154
April 2023

SAMPLE ID:	CAS	SV-1				SV-2				SV-3				SV-4				AA-1			
LAB ID:		L2321166-01				L2321166-02				L2321166-03				L2321166-04				L2321166-05			
COLLECTION DATE:		4/19/2023				4/19/2023				4/19/2023				4/19/2023				4/19/2023			
SAMPLE MATRIX:		SOIL_VAPOR				SOIL_VAPOR				SOIL_VAPOR				SOIL_VAPOR				AIR			
ANALYTE		Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
VOLATILE ORGANICS IN AIR																					
Dichlorodifluoromethane	75-71-8	2.27		1.5	-	2.51		1.98	-	2.59		1.37	-	2.89		0.989	-	2.31		0.989	-
Chloromethane	74-87-3	3.22		0.626	-	13.8		0.826	-	2.91		0.572	-	0.814		0.413	-	1.37		0.413	-
Freon-114	76-14-2	ND		2.12	-	ND		2.8	-	ND		1.94	-	ND		1.4	-	ND		1.4	-
Vinyl chloride	75-01-4	ND		0.775	-	ND		1.02	-	ND		0.708	-	ND		0.511	-	ND		0.511	-
1,3-Butadiene	106-99-0	ND		0.67	-	ND		0.885	-	ND		0.613	-	ND		0.442	-	ND		0.442	-
Bromomethane	74-83-9	ND		1.18	-	ND		1.55	-	ND		1.08	-	ND		0.777	-	ND		0.777	-
Chloroethane	75-00-3	ND		0.8	-	ND		1.06	-	ND		0.731	-	ND		0.528	-	ND		0.528	-
Ethanol	64-17-5	294		14.3	-	688		18.8	-	171		13	-	141		9.42	-	ND		9.42	-
Vinyl bromide	593-60-2	ND		1.32	-	ND		1.75	-	ND		1.21	-	ND		0.874	-	ND		0.874	-
Acetone	67-64-1	254		3.61	-	501		4.75	-	390		3.28	-	88.4		2.38	-	11.1		2.38	-
Trichlorofluoromethane	75-69-4	ND		1.7	-	ND		2.25	-	1.64		1.56	-	1.57		1.12	-	1.33		1.12	-
Isopropanol	67-63-0	9.14		1.86	-	17.6		2.46	-	9.64		1.7	-	7.77		1.23	-	ND		1.23	-
1,1-Dichloroethene	75-35-4	ND		1.2	-	ND		1.59	-	ND		1.1	-	ND		0.793	-	ND		0.793	-
Tertiary butyl Alcohol	75-65-0	28.7		2.3	-	52.1		3.03	-	32.7		2.1	-	15.8		1.52	-	ND		1.52	-
Methylene chloride	75-09-2	ND		2.63	-	ND		3.47	-	ND		2.4	-	ND		1.74	-	ND		1.74	-
3-Chloropropene	107-05-1	ND		0.948	-	ND		1.25	-	ND		0.867	-	ND		0.626	-	ND		0.626	-
Carbon disulfide	75-15-0	ND		0.944	-	ND		1.25	-	1		0.863	-	10.7		0.623	-	ND		0.623	-
Freon-113	76-13-1	ND		2.32	-	ND		3.07	-	ND		2.12	-	ND		1.53	-	ND		1.53	-
trans-1,2-Dichloroethene	156-60-5	ND		1.2	-	ND		1.59	-	ND		1.1	-	ND		0.793	-	ND		0.793	-
1,1-Dichloroethane	75-34-3	ND		1.23	-	ND		1.62	-	ND		1.12	-	ND		0.809	-	ND		0.809	-
Methyl tert butyl ether	1634-04-4	ND		1.09	-	ND		1.44	-	ND		0.999	-	ND		0.721	-	ND		0.721	-
2-Butanone	78-93-3	15.1		2.24	-	25.5		2.95	-	18.2		2.04	-	8.41		1.47	-	2.01		1.47	-
cis-1,2-Dichloroethene	156-59-2	ND		1.2	-	ND		1.59	-	ND		1.1	-	ND		0.793	-	ND		0.793	-
Ethyl Acetate	141-78-6	ND		2.73	-	ND		3.6	-	ND		2.49	-	ND		1.8	-	ND		1.8	-
Chloroform	67-66-3	ND		1.48	-	ND		1.95	-	ND		1.35	-	ND		0.977	-	ND		0.977	-
Tetrahydrofuran	109-99-9	7.37		2.24	-	9.91		2.95	-	4.04		2.04	-	9.26		1.47	-	5.34		1.47	-
1,2-Dichloroethane	107-06-2	ND		1.23	-	ND		1.62	-	ND		1.12	-	ND		0.809	-	ND		0.809	-
n-Hexane	110-54-3	97.3		1.07	-	2.81		1.41	-	140		0.976	-	216		0.705	-	ND		0.705	-
1,1,1-Trichloroethane	71-55-6	ND		1.65	-	ND		2.18	-	ND		1.51	-	1.64		1.09	-	ND		1.09	-
Benzene	71-43-2	3.07		0.968	-	4.44		1.28	-	2.6		0.885	-	3.35		0.639	-	ND		0.639	-
Carbon tetrachloride	56-23-5	ND		1.91	-	ND		2.52	-	ND		1.74	-	ND		1.26	-	ND		1.26	-
Cyclohexane	110-82-7	2.74		1.04	-	6.88		1.38	-	2.1		0.953	-	9.09		0.688	-	ND		0.688	-
1,2-Dichloropropane	78-87-5	ND		1.4	-	ND		1.85	-	ND		1.28	-	ND		0.924	-	ND		0.924	-
Bromodichloromethane	75-27-4	ND		2.03	-	ND		2.68	-	ND		1.86	-	ND		1.34	-	ND		1.34	-
1,4-Dioxane	123-91-1	ND		1.09	-	ND		1.44	-	ND		0.998	-	ND		0.721	-	ND		0.721	-
Trichloroethene	79-01-6	ND		1.63	-	ND		2.15	-	ND		1.49	-	ND		1.07	-	ND		1.07	-
2,2,4-Trimethylpentane	540-84-1	19.4		1.42	-	50.4		1.87	-	7.47		1.29	-	13.3		0.934	-	ND		0.934	-
Heptane	142-82-5	20.2		1.24	-	23		1.64	-	29.9		1.14	-	80.3		0.82	-	ND		0.82	-
cis-1,3-Dichloropropene	10061-01-5	ND		1.38	-	ND		1.82	-	ND		1.26	-	ND		0.908	-	ND		0.908	-
4-Methyl-2-pentanone	108-10-1	ND		3.11	-	ND		4.1	-	ND		2.84	-	ND		2.05	-	ND		2.05	-
trans-1,3-Dichloropropene	10061-02-6	ND		1.38	-	ND		1.82	-	ND		1.26	-	ND		0.908	-	ND		0.908	-
1,1,2-Trichloroethane	79-00-5	ND		1.65	-	ND		2.18	-	ND		1.51	-	ND		1.09	-	ND		1.09	-
Toluene	108-88-3	22.6		1.14	-	88.9		1.51	-	10.7		1.04	-	16.2		0.754	-	ND		0.754	-
2-Hexanone	591-78-6	ND		1.24	-	ND		1.64	-	ND		1.14	-	ND		0.82	-	ND		0.82	-
Dibromochloromethane	124-48-1	ND		2.58	-	ND		3.41	-	ND		2.36	-	ND		1.7	-	ND		1.7	-
1,2-Dibromoethane	106-93-4	ND		2.33	-	ND		3.07	-	ND		2.13	-	ND		1.54	-	ND		1.54	-
Tetrachloroethene	127-18-4	ND		2.05	-	ND		2.71	-	ND		1.88	-	ND		1.36	-	ND		1.36	-
Chlorobenzene	108-90-7	ND		1.4	-	ND		1.84	-	ND		1.28	-	ND		0.921	-	ND		0.921	-
Ethylbenzene	100-41-4	6.25		1.32	-	22.7		1.74	-	3.06		1.2	-	4.52		0.869	-	ND		0.869	-
p/m-Xylene	179601-23-1	17		2.63	-	68.6		3.47	-	9.6		2.41	-	14		1.74	-	ND		1.74	-
Bromoform	75-25-2	ND		3.13	-	ND		4.14	-	ND		2.86	-	ND		2.07	-	ND		2.07	-
Styrene	100-42-5	ND		1.29	-	ND		1.7	-	ND		1.18	-	ND		0.852	-	ND		0.852	-
1,1,2,2-Tetrachloroethane	79-34-5	ND		2.08	-	ND		2.75	-	ND		1.9	-	ND		1.37	-	ND		1.37	-
o-Xylene	95-47-6	8.86		1.32	-	27.5		1.74	-	4.91		1.2	-	7.08		0.869	-	ND		0.869	-
4-Ethyltoluene	622-96-8	ND		1.49	-	2.87		1.97	-	ND		1.36	-	1.01		0.983	-	ND		0.983	-
1,3,5-Trimethylbenzene	108-67-8	2.61		1.49	-	4.4		1.97	-	1.51		1.36	-	1.89		0.983	-	ND		0.983	-
1,2,4-Trimethylbenzene	95-63-6	7.87		1.49	-	11.7		1.97	-	4.75		1.36	-	5.56		0.983	-	ND		0.983	-
Benzyl chloride	100-44-7	ND		1.57	-	ND		2.07	-	ND		1.43	-	ND		1.04	-	ND		1.04	-
1,3-Dichlorobenzene	541-73-1	1.94		1.82	-	3.16		2.4	-	ND		1.67	-	ND		1.2	-	ND		1.2	-
1,4-Dichlorobenzene	106-46-7	ND		1.82	-	ND		2.4	-	ND		1.67	-	ND		1.2	-	ND		1.2	-
1,2-Dichlorobenzene	95-50-1	ND		1.82	-	ND		2.4	-	ND		1.67	-	ND		1.2	-	ND		1.2	-
1,2,4-Trichlorobenzene	120-82-1	ND		2.25	-	ND		2.97	-	ND		2.06	-	ND		1.48	-	ND		1.48	-
Hexachlorobutadiene	87-68-3	ND		3.23	-	ND		4.27	-	ND		2.95	-	ND		2.13	-	ND		2.13	-

Notes:
1. Samples were collected by GZA personnel on the dates listed in the table.
2. Abbreviations:
   Conc = Concentration
   MDL = Method detection limit
   ND = Not detected
   Q = Qualifier
   RL = Reporting limit
   ug/m3 = micrograms per cubic meter

TABLE 6 – Remedial System Monitoring Requirements and Schedule

See Section 4.3.1 of this SMP, Page 34 for Table 6.

TABLE 7 – Remedial System Sampling Requirements and Schedule

See Section 4.3.2 of this SMP, Page 35 for Table 7.

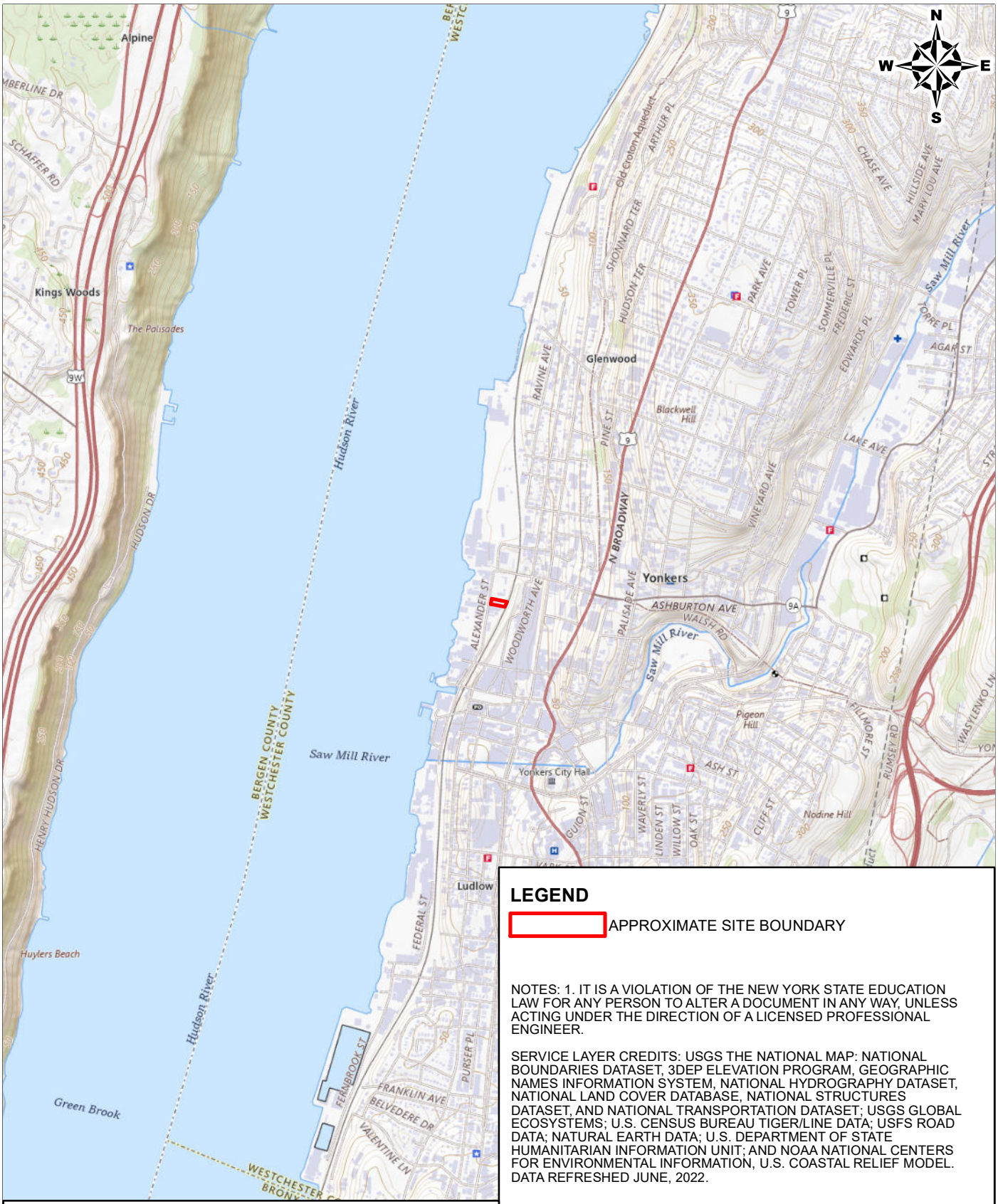
TABLE 8 – Routine Maintenance Annual Summary

See Section 5.3.2 of this SMP, Page 41 for Table 8.

TABLE 9 – Schedule of Interim Monitoring / Inspection Report

See Section 7.1 of this SMP, Page 48 for Table 9.

FIGURES



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APPROXIMATE SITE BOUNDARY

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SCALE IN FEET

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP)
SITE LOCATION MAP

PREPARED BY:
GZA GeoEnvironmental, Inc.
www.gza.com

PREPARED FOR:
MURES ALEXANDER LLC
214 STARR ST.
YONKERS, NY 11237

PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE 1
DESIGNED BY: MB	DRAWN BY: RWT	SCALE: 1 " = 2,000 FEET	
DATE: 04/28/2025	PROJECT NO: 12.0077558.00	REVISION NO:	

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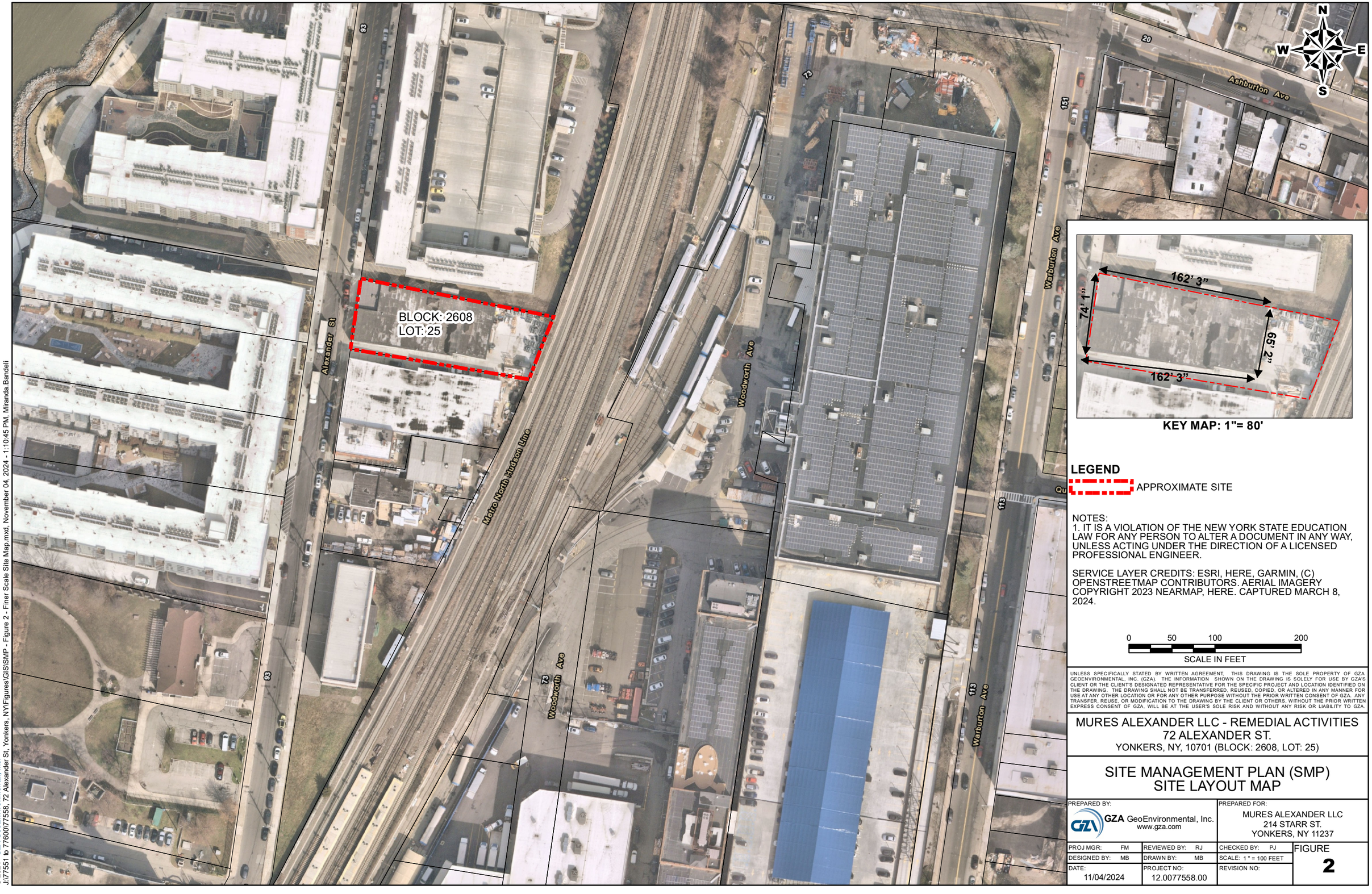
\\GZAFAIRFIELDNJ\Jobs\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\SMP - Figure 1_USGS_SiteMap.mxd, April 28, 2025 - 3:30:52 PM, Rowan.Thompson



KEY MAP: 1"= 80'

LEGEND

APPROXIMATE SITE

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YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP)
SITE LAYOUT MAP

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. www.gza.com		MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237	
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE 2
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1 " = 100 FEET	
DATE: 11/04/2024	PROJECT NO: 12.0077558.00	REVISION NO:	

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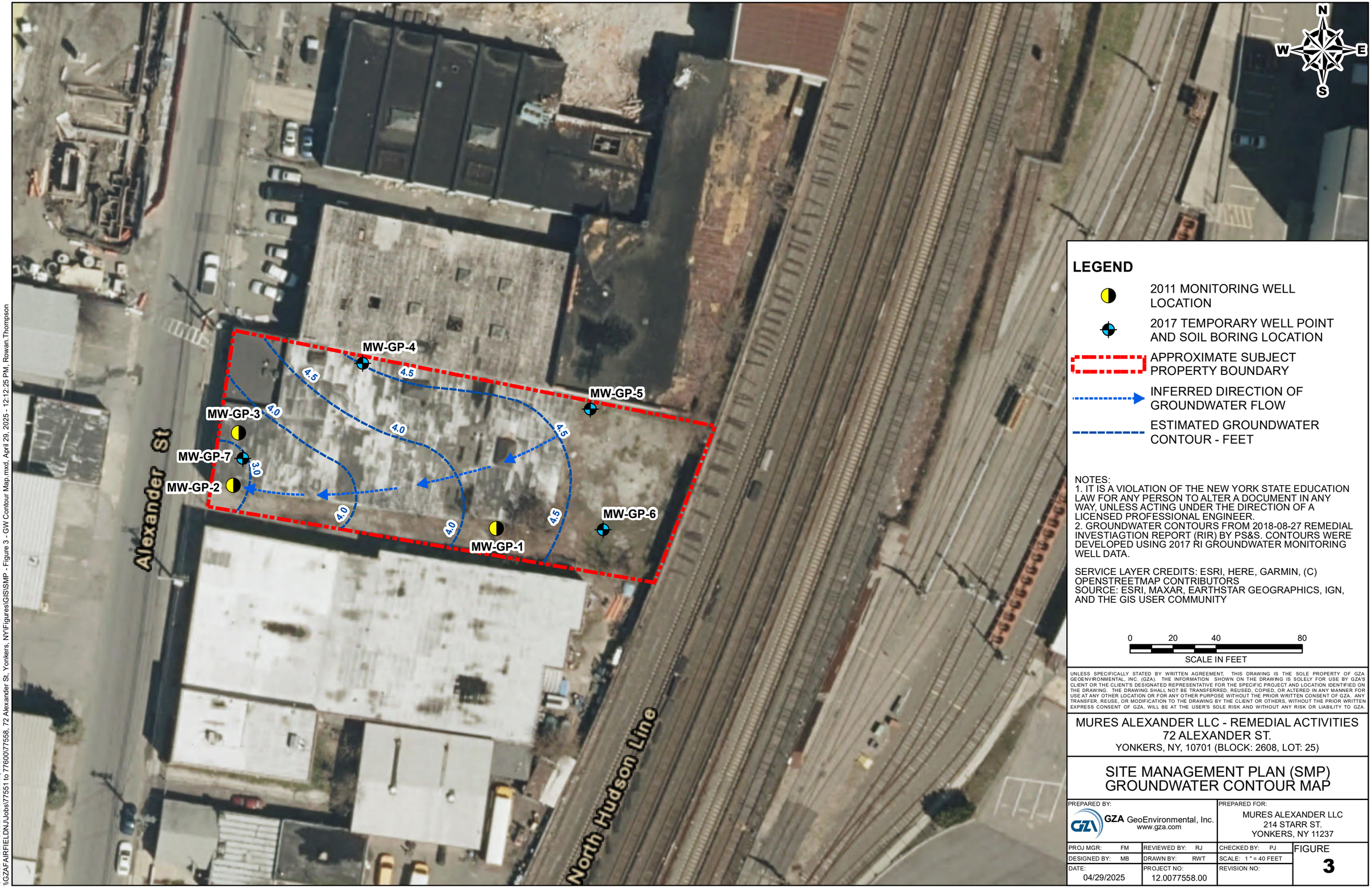

LEGEND

- 2011 MONITORING WELL LOCATION
- 2017 TEMPORARY WELL POINT AND SOIL BORING LOCATION
- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- INFERRED DIRECTION OF GROUNDWATER FLOW
- ESTIMATED GROUNDWATER CONTOUR - FEET

NOTES:
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2. GROUNDWATER CONTOURS FROM 2018-08-27 REMEDIAL INVESTIAGTION REPORT (RIR) BY PS&S. CONTOURS WERE DEVELOPED USING 2017 RI GROUNDWATER MONITORING WELL DATA.

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SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, IGN, AND THE GIS USER COMMUNITY

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YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP) GROUNDWATER CONTOUR MAP

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PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE 3
DESIGNED BY: MB	DRAWN BY: RWT	SCALE: 1 " = 40 FEET	
DATE: 04/29/2025	PROJECT NO: 12.0077558.00	REVISION NO:	

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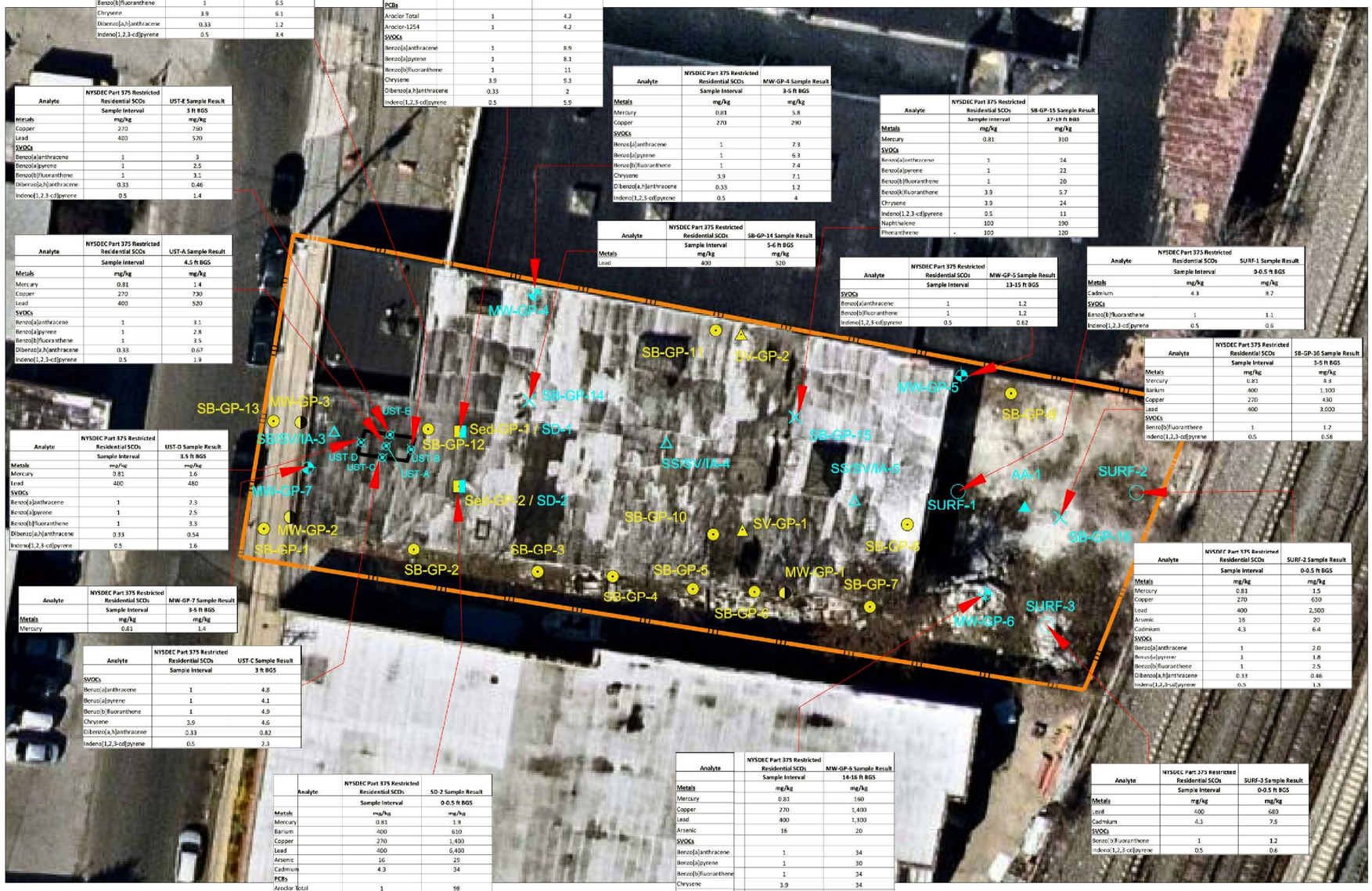
\\GZAFAIRFIELDNJ\Jobs\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\SMP - Figure 3 - GW Contour Map.mxd, April 29, 2025 - 12:12:25 PM, Rowan.Thompson



Analyte	NYSDEC Part 375 Restricted Residential SCOs	UST-B Sample Result
	Sample Interval	5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	0.89
Copper	270	860
Lead	400	1,300
SVOCs		
Benzo[a]anthracene	1	6
Benzo[a]pyrene	1	5.3
Benzo[b]fluoranthene	1	6.5
Chrysene	3.9	6.1
Dibenzo[a,h]anthracene	0.33	1.2
Indeno[1,2,3-cd]pyrene	0.5	3.4

Analyte	NYSDEC Part 375 Restricted Residential SCOs	SD-1 Sample Result
	Sample Interval	0-0.5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	5.1
Barium	400	430
Copper	270	4,600
Lead	400	24,000
Arsenic	16	20
Cadmium	4.3	12
PCBs		
Aroclor Total	1	4.2
Aroclor-1254	1	4.2
SVOCs		
Benzo[a]anthracene	1	8.9
Benzo[a]pyrene	1	8.1
Benzo[b]fluoranthene	1	11
Chrysene	3.9	9.3
Dibenzo[a,h]anthracene	0.33	2
Indeno[1,2,3-cd]pyrene	0.5	5.9

Analyte	NYSDEC Part 375 Restricted Residential SCOs	UST-E Sample Result
	Sample Interval	3 ft BGS
Metals	mg/kg	mg/kg
Copper	270	760
Lead	400	570
SVOCs		
Benzo[a]anthracene	1	3
Benzo[a]pyrene	1	2.5
Benzo[b]fluoranthene	1	3.1
Dibenzo[a,h]anthracene	0.33	0.46
Indeno[1,2,3-cd]pyrene	0.5	1.4

Analyte	NYSDEC Part 375 Restricted Residential SCOs	MW-GP-4 Sample Result
	Sample Interval	3-5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	5.8
Copper	270	290
SVOCs		
Benzo[a]anthracene	1	7.3
Benzo[a]pyrene	1	6.3
Benzo[b]fluoranthene	1	7.4
Chrysene	3.9	7.1
Dibenzo[a,h]anthracene	0.33	1.2
Indeno[1,2,3-cd]pyrene	0.5	4

Analyte	NYSDEC Part 375 Restricted Residential SCOs	SB-GP-15 Sample Result
	Sample Interval	17-19 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	310
SVOCs		
Benzo[a]anthracene	1	24
Benzo[a]pyrene	1	22
Benzo[b]fluoranthene	1	20
Benzo[k]fluoranthene	3.9	5.7
Chrysene	3.9	24
Indeno[1,2,3-cd]pyrene	0.5	11
Naphthalene	100	190
Phenanthrene	100	120

Analyte	NYSDEC Part 375 Restricted Residential SCOs	SB-GP-14 Sample Result
	Sample Interval	5-6 ft BGS
Metals	mg/kg	mg/kg
Lead	400	520

Analyte	NYSDEC Part 375 Restricted Residential SCOs	MW-GP-5 Sample Result
	Sample Interval	13-15 ft BGS
SVOCs		
Benzo[a]anthracene	1	1.2
Benzo[b]fluoranthene	1	1.2
Indeno[1,2,3-cd]pyrene	0.5	0.62

Analyte	NYSDEC Part 375 Restricted Residential SCOs	SURF-1 Sample Result
	Sample Interval	0-0.5 ft BGS
Metals	mg/kg	mg/kg
Cadmium	4.3	8.7
SVOCs		
Benzo[b]fluoranthene	1	1.1
Indeno[1,2,3-cd]pyrene	0.5	0.6

Analyte	NYSDEC Part 375 Restricted Residential SCOs	UST-A Sample Result
	Sample Interval	4.5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	1.4
Copper	270	730
Lead	400	520
SVOCs		
Benzo[a]anthracene	1	3.1
Benzo[a]pyrene	1	2.8
Benzo[b]fluoranthene	1	3.5
Dibenzo[a,h]anthracene	0.33	0.67
Indeno[1,2,3-cd]pyrene	0.5	1.9

Analyte	NYSDEC Part 375 Restricted Residential SCOs	SB-GP-16 Sample Result
	Sample Interval	3-5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	1,100
Barium	400	430
Copper	270	3,000
Lead	400	
SVOCs		
Benzo[b]fluoranthene	1	1.2
Indeno[1,2,3-cd]pyrene	0.5	0.58

Analyte	NYSDEC Part 375 Restricted Residential SCOs	UST-D Sample Result
	Sample Interval	3.5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	1.6
Lead	400	480
SVOCs		
Benzo[a]anthracene	1	2.3
Benzo[a]pyrene	1	2.5
Benzo[b]fluoranthene	1	3.3
Dibenzo[a,h]anthracene	0.33	0.54
Indeno[1,2,3-cd]pyrene	0.5	1.6

Analyte	NYSDEC Part 375 Restricted Residential SCOs	SURF-2 Sample Result
	Sample Interval	0-0.5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	1.5
Copper	270	630
Lead	400	2,500
Arsenic	16	20
Cadmium	4.3	6.4
SVOCs		
Benzo[a]anthracene	1	2.0
Benzo[a]pyrene	1	1.8
Benzo[b]fluoranthene	1	2.5
Dibenzo[a,h]anthracene	0.33	0.46
Indeno[1,2,3-cd]pyrene	0.5	1.3

Analyte	NYSDEC Part 375 Restricted Residential SCOs	MW-GP-7 Sample Result
	Sample Interval	3-5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	1.4

Analyte	NYSDEC Part 375 Restricted Residential SCOs	UST-C Sample Result
	Sample Interval	3 ft BGS
SVOCs		
Benzo[a]anthracene	1	4.8
Benzo[a]pyrene	1	4.1
Benzo[b]fluoranthene	1	4.9
Chrysene	3.9	4.6
Dibenzo[a,h]anthracene	0.33	0.82
Indeno[1,2,3-cd]pyrene	0.5	2.3

Analyte	NYSDEC Part 375 Restricted Residential SCOs	SD-2 Sample Result
	Sample Interval	0-0.5 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	1.9
Barium	400	610
Copper	270	1,400
Lead	400	6,400
Arsenic	16	29
Cadmium	4.3	34
PCBs		
Aroclor Total	1	98
Aroclor-1254	1	98
SVOCs		
Benzo[a]anthracene	1	10
Benzo[a]pyrene	1	7.7
Benzo[b]fluoranthene	1	9.6
Chrysene	3.9	10
Indeno[1,2,3-cd]pyrene	0.5	4.6

Analyte	NYSDEC Part 375 Restricted Residential SCOs	MW-GP-6 Sample Result
	Sample Interval	14-16 ft BGS
Metals	mg/kg	mg/kg
Mercury	0.81	160
Copper	270	1,400
Lead	400	1,300
Arsenic	16	20
SVOCs		
Benzo[a]anthracene	1	34
Benzo[a]pyrene	1	30
Benzo[b]fluoranthene	1	34
Chrysene	3.9	34
Naphthalene	100	1,600
Phenanthrene	100	190
Pyrene	100	130
VOCs		
Benzene	4.8	180
Ethylbenzene	41	200
m&p Xylenes	100	210
Total Xylenes	100	290

Analyte	NYSDEC Part 375 Restricted Residential SCOs	SURF-3 Sample Result
	Sample Interval	0-0.5 ft BGS
Metals	mg/kg	mg/kg
Lead	400	680
Cadmium	4.3	7.5
SVOCs		
Benzo[b]fluoranthene	1	1.2
Indeno[1,2,3-cd]pyrene	0.5	0.6

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LEGEND

- Property Boundary
- 2011 Monitoring well Location
- 2011 Soil vapor Investigation Location
- 2011 Soil Boring Location
- 2011/2017 Sewer Debris Sample Location
- 2017 Soil Boring Location
- Combined Soil Vapor, Sub Slab and Indoor Air Sample Location
- 2017 Temporary Well Point and Soil Boring Location
- Ambient Air Sample Location
- 2017 Surface Soil Sample Location
- 2017 Post-Excavation Soil Sample Location
- Approximate UST Location

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0 100 200 400
SCALE IN FEET

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP)
2017 RI SOIL SAMPLE EXCEEDANCES

PREPARED BY:
GZA GeoEnvironmental, Inc.
www.gza.com

PREPARED FOR:
MURES ALEXANDER LLC
214 STARR ST.
YONKERS, NY 11237

PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE	
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1 " = 200 FEET		4A
DATE: 08/07/2024	PROJECT NO: 12.0077558.00	REVISION NO:		

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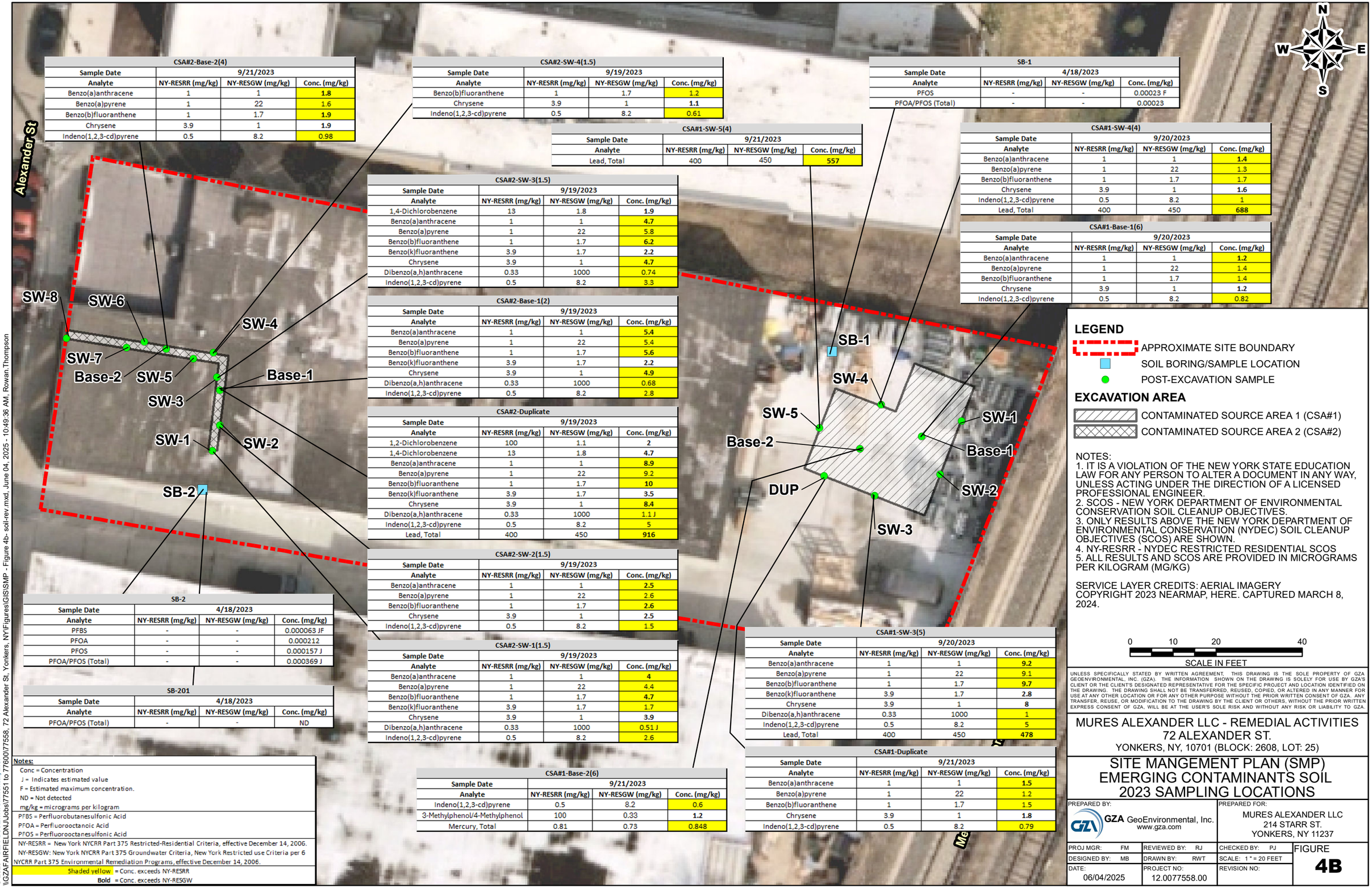
\\GZAFAIRFIELDNJ\Jobs\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\SMP - Figure 4A- 2017 soil.mxd, August 07, 2024 - 1:49:42 PM, Miranda.Bandeli



CSA#2-Base-2(4)			
Sample Date	9/21/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(a)anthracene	1	1	**1.8**
Benzo(a)pyrene	1	22	1.6
Benzo(b)fluoranthene	1	1.7	**1.9**
Chrysene	3.9	1	**1.9**
Indeno(1,2,3-cd)pyrene	0.5	8.2	0.98

CSA#2-SW-4(1.5)			
Sample Date	9/19/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(b)fluoranthene	1	1.7	1.2
Chrysene	3.9	1	**1.1**
Indeno(1,2,3-cd)pyrene	0.5	8.2	0.61

SB-1			
Sample Date	4/18/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
PFOS	-	-	0.00023 F
PFOA/PFOS (Total)	-	-	0.00023

CSA#1-SW-5(4)			
Sample Date	9/21/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Lead, Total	400	450	**557**

CSA#1-SW-4(4)			
Sample Date	9/20/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(a)anthracene	1	1	**1.4**
Benzo(a)pyrene	1	22	1.3
Benzo(b)fluoranthene	1	1.7	**1.7**
Chrysene	3.9	1	**1.6**
Indeno(1,2,3-cd)pyrene	0.5	8.2	1
Lead, Total	400	450	**688**

CSA#1-Base-1(6)			
Sample Date	9/20/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(a)anthracene	1	1	**1.2**
Benzo(a)pyrene	1	22	1.4
Benzo(b)fluoranthene	1	1.7	1.4
Chrysene	3.9	1	**1.2**
Indeno(1,2,3-cd)pyrene	0.5	8.2	0.82

CSA#2-SW-3(1.5)			
Sample Date	9/19/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
1,4-Dichlorobenzene	13	1.8	**1.9**
Benzo(a)anthracene	1	1	**4.7**
Benzo(a)pyrene	1	22	**5.8**
Benzo(b)fluoranthene	1	1.7	**6.2**
Benzo(k)fluoranthene	3.9	1.7	**2.2**
Chrysene	3.9	1	**4.7**
Dibenzo(a,h)anthracene	0.33	1000	0.74
Indeno(1,2,3-cd)pyrene	0.5	8.2	**3.3**

CSA#2-Base-1(2)			
Sample Date	9/19/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(a)anthracene	1	1	**5.4**
Benzo(a)pyrene	1	22	**5.4**
Benzo(b)fluoranthene	1	1.7	**5.6**
Benzo(k)fluoranthene	3.9	1.7	**2.2**
Chrysene	3.9	1	**4.9**
Dibenzo(a,h)anthracene	0.33	1000	0.68
Indeno(1,2,3-cd)pyrene	0.5	8.2	**2.8**

CSA#2-Duplicate			
Sample Date	9/19/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
1,2-Dichlorobenzene	100	1.1	**2**
1,4-Dichlorobenzene	13	1.8	**4.7**
Benzo(a)anthracene	1	1	**8.9**
Benzo(a)pyrene	1	22	**9.2**
Benzo(b)fluoranthene	1	1.7	**10**
Benzo(k)fluoranthene	3.9	1.7	**3.5**
Chrysene	3.9	1	**8.4**
Dibenzo(a,h)anthracene	0.33	1000	**1.1 J**
Indeno(1,2,3-cd)pyrene	0.5	8.2	**5**
Lead, Total	400	450	**916**

CSA#2-SW-2(1.5)			
Sample Date	9/19/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(a)anthracene	1	1	**2.5**
Benzo(a)pyrene	1	22	**2.6**
Benzo(b)fluoranthene	1	1.7	**2.6**
Chrysene	3.9	1	**2.5**
Indeno(1,2,3-cd)pyrene	0.5	8.2	**1.5**

CSA#2-SW-1(1.5)			
Sample Date	9/19/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(a)anthracene	1	1	**4**
Benzo(a)pyrene	1	22	**4.4**
Benzo(b)fluoranthene	1	1.7	**4.7**
Benzo(k)fluoranthene	3.9	1.7	**1.7**
Chrysene	3.9	1	**3.9**
Dibenzo(a,h)anthracene	0.33	1000	0.51 J
Indeno(1,2,3-cd)pyrene	0.5	8.2	**2.6**

SB-2			
Sample Date	4/18/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
PFBS	-	-	0.000063 JF
PFOA	-	-	0.000212
PFOS	-	-	0.000157 J
PFOA/PFOS (Total)	-	-	0.000369 J

SB-201			
Sample Date	4/18/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
PFOA/PFOS (Total)	-	-	ND

CSA#1-SW-3(5)			
Sample Date	9/20/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(a)anthracene	1	1	**9.2**
Benzo(a)pyrene	1	22	**9.1**
Benzo(b)fluoranthene	1	1.7	**9.7**
Benzo(k)fluoranthene	3.9	1.7	**2.8**
Chrysene	3.9	1	**8**
Dibenzo(a,h)anthracene	0.33	1000	**1**
Indeno(1,2,3-cd)pyrene	0.5	8.2	**5**
Lead, Total	400	450	**478**

CSA#1-Duplicate			
Sample Date	9/21/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Benzo(a)anthracene	1	1	**1.5**
Benzo(a)pyrene	1	22	**1.2**
Benzo(b)fluoranthene	1	1.7	**1.5**
Chrysene	3.9	1	**1.8**
Indeno(1,2,3-cd)pyrene	0.5	8.2	**0.79**

CSA#1-Base-2(6)			
Sample Date	9/21/2023		
Analyte	NY-RESRR (mg/kg)	NY-RESGW (mg/kg)	Conc. (mg/kg)
Indeno(1,2,3-cd)pyrene	0.5	8.2	**0.6**
3-Methylphenol/4-Methylphenol	100	0.33	**1.2**
Mercury, Total	0.81	0.73	**0.848**

Notes:

Conc = Concentration
J = Indicates estimated value
F = Estimated maximum concentration.
ND = Not detected
mg/kg = micrograms per kilogram

PFBS = Perfluorobutanesulfonic Acid
PFOA = Perfluorooctanoic Acid
PFOS = Perfluorooctanesulfonic Acid

NY-RESRR = New York NYCRR Part 375 Restricted-Residential Criteria, effective December 14, 2006.
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Shaded yellow = Conc. exceeds NY-RESRR
Bold = Conc. exceeds NY-RESGW

LEGEND

- APPROXIMATE SITE BOUNDARY
- SOIL BORING/SAMPLE LOCATION
- POST-EXCAVATION SAMPLE

EXCAVATION AREA

- CONTAMINATED SOURCE AREA 1 (CSA#1)
- CONTAMINATED SOURCE AREA 2 (CSA#2)

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4. NY-RESRR - NYDEC RESTRICTED RESIDENTIAL SCOS
5. ALL RESULTS AND SCOS ARE PROVIDED IN MICROGRAMS PER KILOGRAM (MG/KG)

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0 10 20 40
SCALE IN FEET

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANGEMENT PLAN (SMP) EMERGING CONTAMINANTS SOIL 2023 SAMPLING LOCATIONS

PREPARED BY:
GZA GeoEnvironmental, Inc.
www.gza.com

PREPARED FOR:
MURES ALEXANDER LLC
214 STARR ST.
YONKERS, NY 11237

PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE
DESIGNED BY: MB	DRAWN BY: RWT	SCALE: 1 " = 20 FEET	**4B**
DATE: 06/04/2025	PROJECT NO: 12.0077558.00	REVISION NO:	

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\\GZAFAIRFIELDNJ\Jobs\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\SMP - Figure 4b- soil-rev.mxd, June 04, 2025 - 10:49:36 AM, Rowan.Thompson

Analyte	NYSDEC TOGS Water Quality Standards	MW-GP-4 Sample Result
	Sample Interval	8 ft BGS
Metals	ug/L	ug/L
Iron	300	350
VOCs		
Chloroform	7	33

Analyte	NYSDEC TOGS Water Quality Standards	MW-GP-5 Sample Result
	Sample Interval	8 ft BGS
Metals	ug/L	ug/L
Iron	300	2,000

Analyte	NYSDEC TOGS Water Quality Standards	MW-GP-7 Sample Result
	Sample Interval	8 ft BGS
Metals	ug/L	ug/L
Iron	300	3,600

Analyte	NYSDEC TOGS Water Quality Standards	MW-GP-6 Sample Result
	Sample Interval	8 ft BGS
Metals	ug/L	ug/L
Iron	300	350
Manganese	300	930

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LEGEND

- Property Boundary
- 2011 Monitoring well Location
- 2011 Soil vapor Investigation Location
- 2011 Soil Boring Location
- 2011/2017 Sewer Debris Sample Location
- 2017 Soil Boring Location
- Combined Soil Vapor, Sub Slab and Indoor Air Sample Location
- 2017 Temporary Well Point and Soil Boring Location
- Ambient Air Sample Location
- 2017 Surface Soil Sample Location
- 2017 Post-Excavation Soil Sample Location
- Approximate UST Location

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0 110 220 440

SCALE IN FEET

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP) 2017 RI GROUNDWATER SAMPLE EXCEEDANCES

PREPARED BY: GZA GeoEnvironmental, Inc. www.gza.com		PREPARED FOR: MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237	
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE 5A
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1 " = 220 FEET	
DATE: 08/07/2024	PROJECT NO: 12.0077558.00	REVISION NO:	

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TW-1		
Sample Date	4/18/2023	
Analyte	NY-AWQS (ug/l)	Conc. (ug/l)
PFBA	-	0.00758
PFPeA	-	0.00285 JF
PFBS	-	0.00179
PFHxA	-	0.00277
PFHpA	-	0.00179
PFHxS	-	0.00147 J
PFOA	0.0067	0.0088
6:2FTS	-	0.0116
PFOS	0.0027	0.00171
PFOA/PFOS (Total)	-	0.0105

TW-101		
Sample Date	4/18/2023	
Analyte	NY-AWQS (ug/l)	Conc. (ug/l)
PFBA	-	0.00775
PFPeA	-	0.00296 JF
PFBS	-	0.00175
PFHxA	-	0.00304
PFHpA	-	0.00182
PFHxS	-	0.00137 J
PFOA	0.0067	0.00843
6:2FTS	-	0.00744
PFOS	0.0027	0.00243
PFOA/PFOS (Total)	-	0.0109

TW-2		
Sample Date	4/18/2023	
Analyte	NY-AWQS (ug/l)	Conc. (ug/l)
PFBA	-	0.00633 J
PFPeA	-	0.00557 F
PFBS	-	0.00144 J
PFHxA	-	0.00448
PFHpA	-	0.00253
PFHxS	-	0.00076 J
PFOA	0.0067	0.00659
6:2FTS	-	0.0367
PFOS	0.0027	0.00169
PFOA/PFOS (Total)	-	0.00828

TW-1

TW-2

Alexander St

Metro North Hudson

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LEGEND

- APPROXIMATE SITE BOUNDARY
- TEMPORARY WELL SAMPLE LOCATION

EXCAVATION AREA

- CONTAMINATED SOURCE AREA 1 (CSA#1)
- CONTAMINATED SOURCE AREA 2 (CSA#2)

NOTES:
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SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, (C) OPENSTREETMAP CONTRIBUTORS
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, IGN, AND THE GIS USER COMMUNITY

0 20 40 80
SCALE IN FEET

Notes:

Conc. = Concentration

F = Estimated maximum concentration

J = Indicates estimated value

ug/l = micrograms per liter

Shaded yellow= Conc. exceeds NY-AWQS

NY-AWQS = New York TOGS 111 Ambient Water Quality Standards & Guidance Values Criteria per Standards & Guidance Values including all addenda through February 2023.

PFBA = Perfluorobutanoic Acid

PFPeA = Perfluoropentanoic Acid

PFBS = Perfluorobutanesulfonic Acid

PFHxA = Perfluorohexanoic Acid

PFHpA = Perfluoroheptanoic Acid

PFHxS = Perfluorohexanesulfonic Acid

PFOA = Perfluorooctanoic Acid

6:2FTS = 1H,1H,2H,2H-Perfluorooctanesulfonic Acid

PFOA = Perfluorooctanoic Acid

PFOS = Perfluorooctanesulfonic Acid

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\\GZAFAIRFIELDNJ\Jobs\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\SMP - Figure 5B - GW results.mxd, August 05, 2025 - 10:00:34 AM, Rowan.Thompson

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP) EMERGING CONTAMINANTS GW 2023 SAMPLING LOCATIONS

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. www.gza.com		MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237	
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: DW	FIGURE
DESIGNED BY: MB	DRAWN BY: RWT	SCALE: 1 " = 40 FEET	5B
DATE: 08/05/2025	PROJECT NO: 12.0077558.00	REVISION NO:	

Sample ID IA-4 / SS-4				
Analyte / DOH Matrix	CAS	Indoor Air Concentration (ug/m3)	Sub Slab Concentration (ug/m3)	DOH Required Action
1,1,1-Trichloroethane Matrix B	71-55-6	0.535	10,400	Mitigate

Sample ID		SV-GP-4		
Collection Date		9/18/2017		
Matrix		Air		
units		ug/m3		
Analyte	CAS	Result	Q	LOD
1,1,1-Trichloroethane	71-55-6	2,900		10.9

Sample ID IA-5 / SS-5				
Analyte / DOH Matrix	CAS	Indoor Air Concentration (ug/m3)	Sub Slab Concentration (ug/m3)	DOH Required Action
1,1,1-Trichloroethane Matrix B	71-55-6	0.715	35,700	Mitigate

Sample ID		SV-GP-5		
Collection Date		9/18/2017		
Matrix		Air		
units		ug/m3		
Analyte	CAS	Result	Q	LOD
1,1,1-Trichloroethane	71-55-6	37,900		170

N

W E

S

LEGEND

- Property Boundary
- 2011 Monitoring well Location
- 2011 Soil vapor Investigation Location
- 2011 Soil Boring Location
- 2011/2017 Sewer Debris Sample Location
- 2017 Soil Boring Location
- Combined Soil Vapor, Sub Slab and Indoor Air Sample Location
- 2017 Temporary Well Point and Soil Boring Location
- Ambient Air Sample Location
- 2017 Surface Soil Sample Location
- 2017 Post-Excavation Soil Sample Location
- Approximate UST Location

NOTES:
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2. THIS FIGURE WAS ORIGINALLY DRAFTED BY PS&S (PAULUS, SOKOLOWSKI AND SARTOR, LLC). SAMPLE LOCATIONS WERE SURVEYED BY PS&S, DATED SEPTEMBER 2017. AERIAL IMAGERY WAS OBTAINED FROM BING MAPS DATED MARCH 26, 2016. ORIGINAL SCALE 1 IN = 30'. 2017 SAMPLE DATA FROM SEPTEMBER 2017 REMEDIAL INVESTIGATION.

0 110 220 440

SCALE IN FEET

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

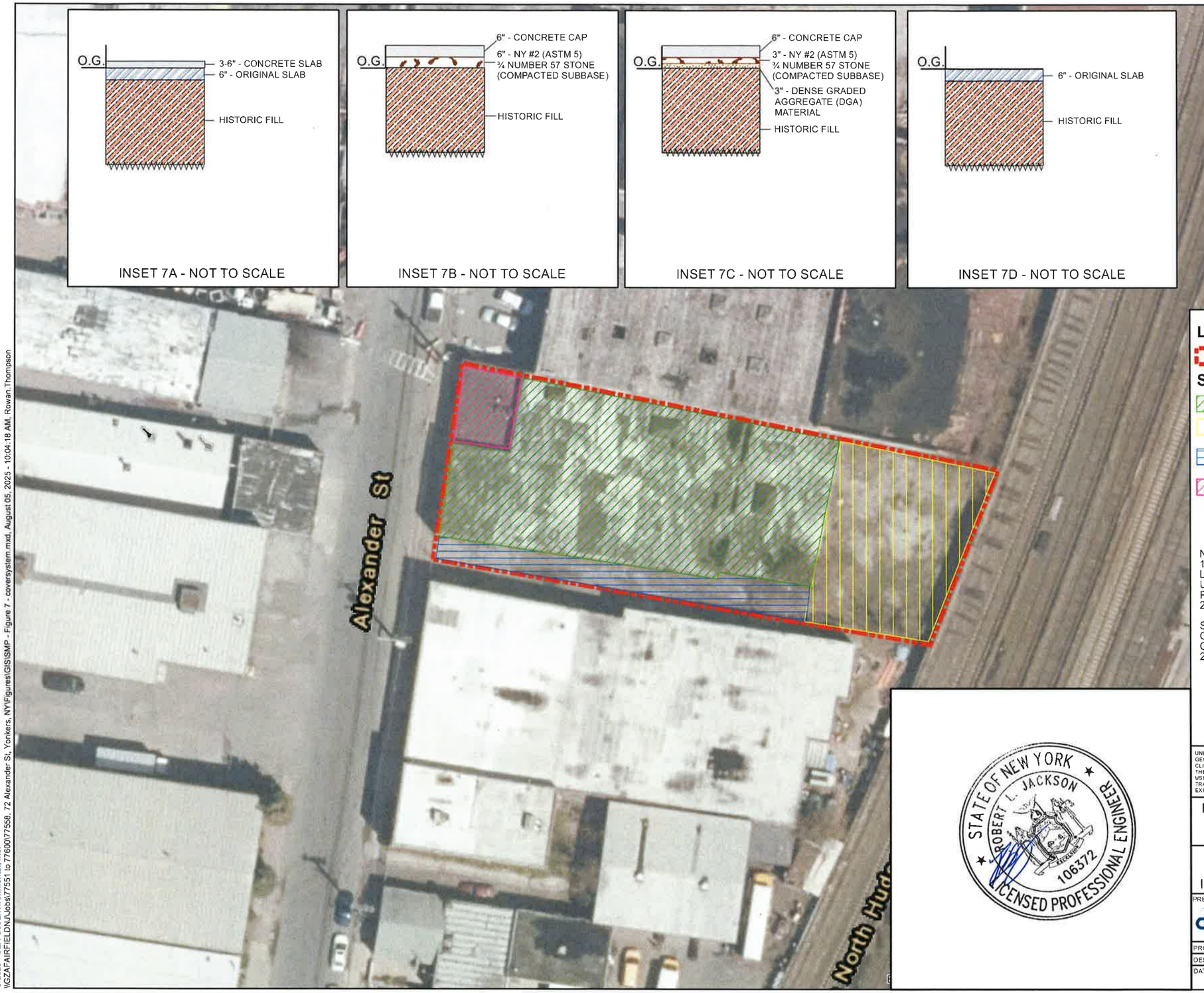
SITE MANAGEMENT PLAN (SMP) 2017 RI SOIL VAPOR SAMPLE EXCEEDANCES

PREPARED BY:
GZA GeoEnvironmental, Inc.
www.gza.com

PREPARED FOR:
MURES ALEXANDER LLC
214 STARR ST.
YONKERS, NY 11237

PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE	
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1 " = 220 FEET		6
DATE: 08/07/2024	PROJECT NO: 12.0077558.00	REVISION NO:		

© 2024 - GZA GeoEnvironmental, Inc.
\\GZAFAIRFIELDNJ\Jobs\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\SMP - Figure 6 - 2017 SV.mxd, August 07, 2024 - 2:00:04 PM, Miranda.Bandeli



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2. O.G. - ORIGINAL GRADE

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0 20 40 80
SCALE IN FEET

STATE OF NEW YORK
ROBERT L. JACKSON
106372
LICENSED PROFESSIONAL ENGINEER

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP)
SITE WIDE COVER SYSTEM &
INSTITUTIONAL CONTROL BOUNDARIES AS-BUILT

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. www.gza.com		MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237	
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE 7
DESIGNED BY: MB	DRAWN BY: RWT	SCALE: 1" = 40 FEET	
DATE: 08/05/2025	PROJECT NO: 12.0077558.00	REVISION NO:	

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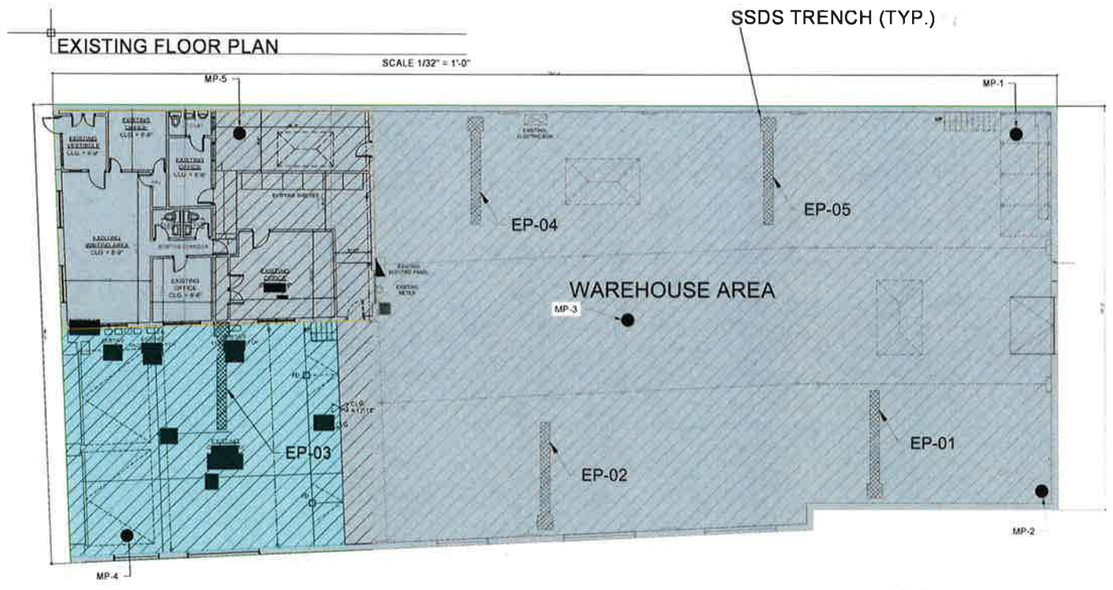
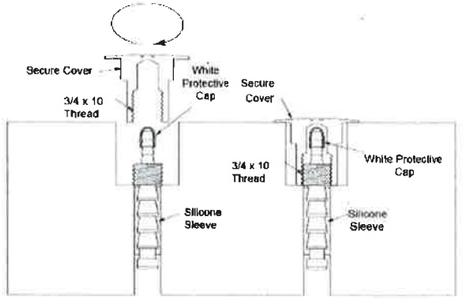
\\GZAFAIRFIELDNJ\Jobs\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\SMP - Figure 7 - coversystem.mxd, August 05, 2025 - 10:04:18 AM, Rowan.Thompson

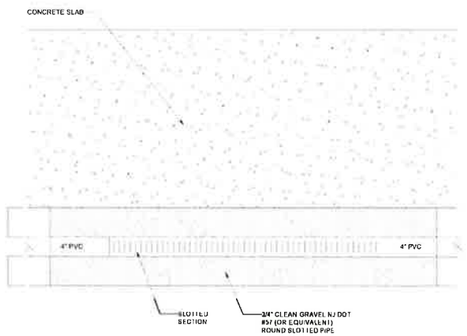


NOTES:

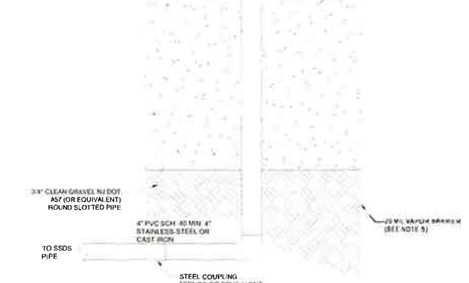
1. RENOVA WILL FURNISH AND INSTALL 4" SCHEDULE 40 PVC PERFORATED AND SOLID PIPE AND FITTINGS FOR THE SUB SLAB PIPE RUNS.
2. EACH OF THE FIVE (5) TRENCHES WILL BE 2-FEET WIDE BY 12-FEET LONG
3. RENOVA WILL INSTALL THE PIPING ON A GRADED 4" BED OF ¾" STONE BELOW THE SLAB GRADE.
4. THE PIPE WILL BE COUPLED AND GLUED TOGETHER PER MANUFACTURER'S RECOMMENDATION.
5. THE TRENCH WILL BE BACKFILLED TO WITHIN 4-INCHES OF FINISH GRADE AND A 20-MIL POLY LINER WILL BE INSTALLED AND TAPED TO THE EDGES OF THE CONCRETE.
6. THE PIPING WILL TRANSITION ABOVE GROUND TO STEEL PIPING COUPLED TO THE PVC PIPING WITH A "NO HUB" COUPLING.
7. AN INITIAL 2-FOOT SPOOL OF STEEL PIPE WILL BE INSTALLED AND SECURED TO THE WALL. ONCE THIS SPOOL IS IN PLACE THE CONCRETE WILL BE REPAIRED WITH A HAND /BAG MIXED 5000 PSI CONCRETE.
8. A BOOT WILL BE INSTALLED ON THE ROOF PENETRATING THE CEILING DIRECTLY ABOVE THE PIPE, BY OTHERS, TO COMPLETE THE VEP INTERIOR INSTALLATION.
9. THE FAN WILL BE SET APPROXIMATELY 2-FEET ABOVE THE ROOF AND HAVE A STACK THAT DOES NOT EXCEED 6-FEET IN OVERALL HEIGHT. RENOVA WILL PROVIDE A SINGLE POINT OF ANCHORING ON THE ROOF DIRECTLY TO THE EXISTING PARAPET. THE SSDS WILL BE INSTALLED TO MEET NEW YORK STATE DEPARTMENT OF HEALTH, VAPOR INTRUSION GUIDANCE REQUIREMENTS.
10. ONCE THE SSDS IS INSTALLED AND OPERATIONAL, THE BUILDING WILL BE TESTED TO DETERMINE IF AN ADEQUATE VACUUM HAS BEEN ACHIEVED THROUGHOUT THE MONITORED AREA. SHOULD THE AREA ADJACENT TO THE OFFICE NOT SHOW THE NECESSARY VACUUM, THE FLOOR IN THIS AREA WILL BE SEALED WITH THE RETRO-COAT SYSTEM.
11. IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER A DOCUMENT IN ANY WAY, UNLESS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER.



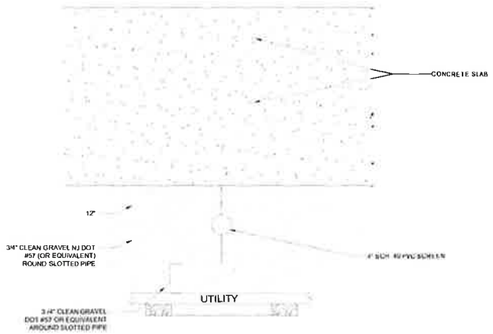
TYP. SSDS VAPOR PIN MONITORING POINT DETAIL



TYP. SSDS INSTALLATION



SUB SLAB BELOW GRADE/ABOVE GRADE TRANSITION



TYP. CONSTRUCTION AND INSTALLATION OF SSDS PIPING

LEGEND

- EXISTING MONITORING POINT (VAPOR PIN)
- OFFICE/SHELF AREA
- GARAGE BAY AREA
- 3" TO 5" CONCRETE SLAB
- EXTENT OF INSTITUTIONAL CONTROLS

PE STAMP

NO.	ISSUE/DESCRIPTION	BY	DATE

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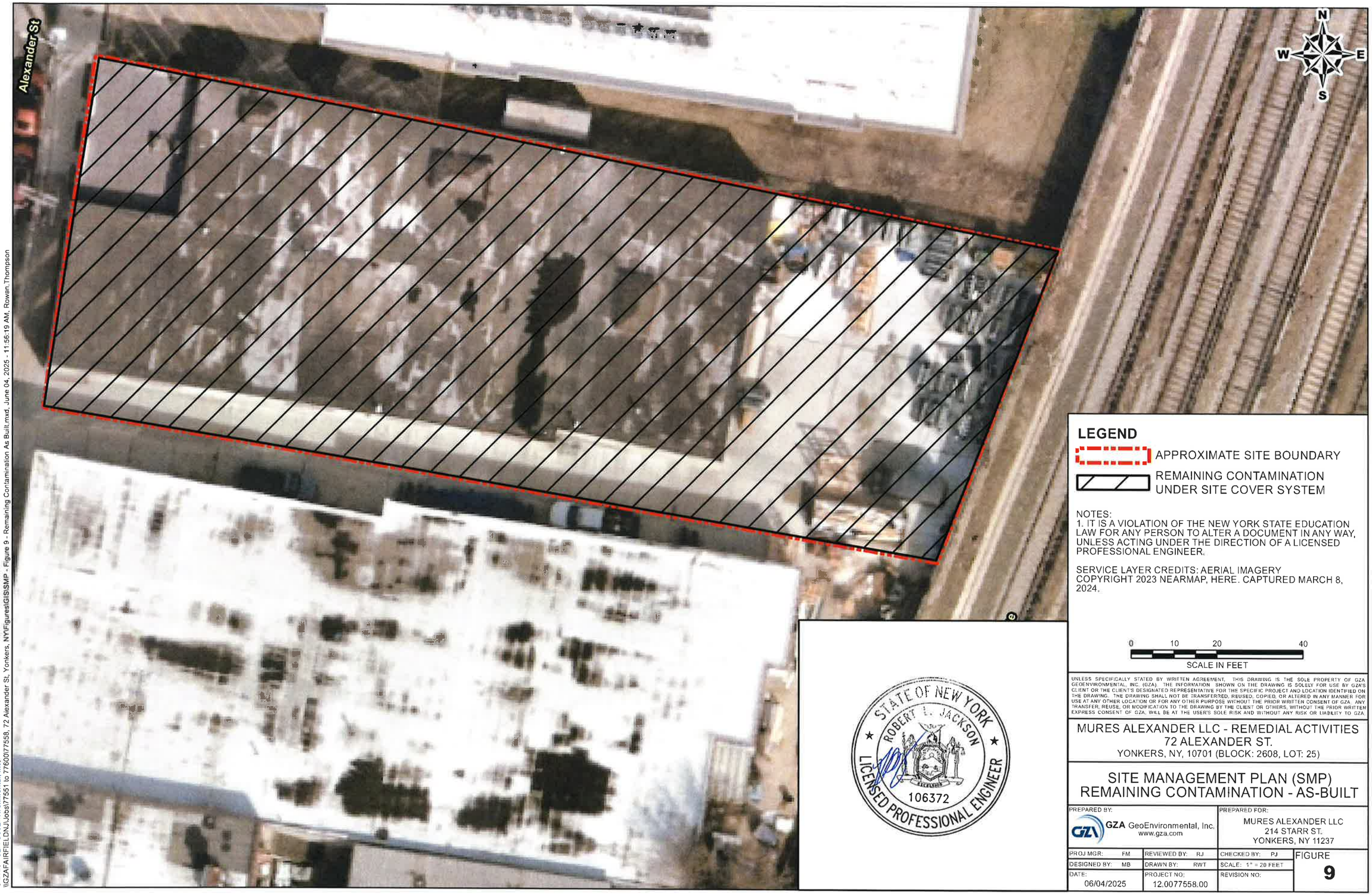
MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP)
SSDS LAYOUT AS-BUILT DRAWING

PREPARED BY	PREPARED FOR
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237

PROJ MGR FM	REVIEWED BY RJ	CHECKED BY PJ	FIGURE
DESIGNED BY MB	DRAWN BY MB	SCALE NTS	8
DATE JUNE 2024	PROJECT NO 12.0077558.00	REVISION NO	SHEET NO

© 2025 - GZA GeoEnvironmental, Inc. G:\GZA\REFTELNA\JOBS\77551 TO 77600\77554, 72 ALEXANDER ST, YONKERS, NY\FIGURES\CAD\12 ALEXANDER_2025 SYSTEM LAYOUT 2 - REVISIONS.DWG - JUNE 5, 2025 11:51AM VANESSA WALLOT



LEGEND

APPROXIMATE SITE BOUNDARY

REMAINING CONTAMINATION UNDER SITE COVER SYSTEM

NOTES:
1. IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER A DOCUMENT IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER.

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SCALE IN FEET

STATE OF NEW YORK
ROBERT L. JACKSON
106372
LICENSED PROFESSIONAL ENGINEER

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE MANAGEMENT PLAN (SMP) REMAINING CONTAMINATION - AS-BUILT

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. www.gza.com		MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237	
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: PJ	FIGURE 9
DESIGNED BY: MB	DRAWN BY: RWT	SCALE: 1" = 20 FEET	
DATE: 06/04/2025	PROJECT NO: 12.0077558.00	REVISION NO:	

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\\GZAFAIRFIELDNJ\Jobs\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\SMP - Figure 9 - Remaining Contamination As Built.mxd, June 04, 2025 - 11:56:19 AM, Rowan.Thompson

APPENDIX A – ENVIRONMENTAL EASEMENT

The Office of the Westchester County Clerk: This page is part of the instrument; the County Clerk will rely on the information provided on this page for purposes of indexing this instrument. To the best of submitter's knowledge, the information contained on this Recording and Endorsement Cover Page is consistent with the information contained in the attached document.

641733043EAS001V

Westchester County Recording & Endorsement Page

Submitter Information

Name:	Stewart Title Insurance Company (pick up by Ramon .	Phone:	914-993-9393
Address 1:	711 Westchester Avenue, Ste 302	Fax:	914-997-1698
Address 2:		Email:	nymetrorecordings@stewart.com
City/State/Zip:	White Plains NY 10604	Reference for Submitter:	2454403/81308686 Glenwood Containe

Document Details

Control Number: **641733043** Document Type: **Easement (EAS)**

Package ID: 2024062100031001001 Document Page Count: **10** Total Page Count: **11**

Parties

☐ Additional Parties on Continuation page

1st PARTY		2nd PARTY	
1: MURES ALEXANDER LLC	- Other	1: NEW YORK STATE OF	- Other
2: ALEXANDER 72G LLC	- Other	2:	

Property

☐ Additional Properties on Continuation page

Street Address: 72 ALEXANDER STREET Tax Designation: 2-2608-25

City/Town: YONKERS Village:

Cross- References

☐ Additional Cross-Refs on Continuation page

1: 2: 3: 4:

Supporting Documents

1: TP-584

Recording Fees

Statutory Recording Fee:	$40.00
Page Fee:	$55.00
Cross-Reference Fee:	$0.00
Mortgage Affidavit Filing Fee:	$0.00
RP-5217 Filing Fee:	$0.00
TP-584 Filing Fee:	$5.00
RPL 291 Notice Fee:	$0.00
Total Recording Fees Paid:	**$100.00**

Transfer Taxes

Consideration:	$0.00
Transfer Tax:	$0.00
Mansion Tax:	$0.00
Transfer Tax Number:	4042

Mortgage Taxes

Document Date:

Mortgage Amount:

Basic:	$0.00
Westchester:	$0.00
Additional:	$0.00
MTA:	$0.00
Special:	$0.00
Yonkers:	$0.00
Total Mortgage Tax:	**$0.00**

Dwelling Type: Exempt: ☐

Serial #:

RECORDED IN THE OFFICE OF THE WESTCHESTER COUNTY CLERK

Recorded: 10/31/2024 at 11:49 AM

Control Number: **641733043**

Witness my hand and official seal

Timothy C.Idoni
Westchester County Clerk

Record and Return To

☐ Pick-up at County Clerk's office

Stewart Title Insurance
711 Westchester Avenue
Suite 302
White Plains , NY 10604

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 26th day of September, 2024 between Owners, Mures Alexander, LLC and Alexander 72G, LLC, each having an office at 214 Starr St., 2nd Floor, Brooklyn, County of Kings, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 72 Alexander Street in the City of Yonkers, County of Westchester and State of New York, known and designated on the tax map of the County Clerk of Westchester as tax map parcel number: Section 2 Block 2608 Lot 25, being the same as that property conveyed to Grantor by deed dated June 22, 2023 and recorded in the Westchester County Clerk's Office in Instrument No. 631243142. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.399 +/- acres, and is hereinafter more fully described in the Land Title Survey dated June 4, 2018 and last revised August 1, 2024, prepared by William H. Free, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is

extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C360154-07-16, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Westchester County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation

pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C360154
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and

communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Mures Alexander, LLC:

By: _____

Print Name: Ioan Sida

Title: President Date: 9/4/2024

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 4th day of September, in the year 2024, before me, the undersigned, personally appeared Ioan Sida, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

DAVID J SILVER
Notary Public - State of New York
NO. 01SI6391007
Qualified in Kings County
My Commission Expires Apr 29, 2027

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Alexander 72G, LLC:

By: _____

Print Name: Gheorghe Sita

Title: OWNER Date: 9/4/2024

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 4th day of September, in the year 2024, before me, the undersigned, personally appeared Gheorghe Sita, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

DAVID J SILVER
Notary Public - State of New York
NO. 01SI6391007
Qualified in Kings County
My Commission Expires Apr 29, 2027

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting by and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: Andrew Guglielmi
Andrew O. Guglielmi, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 26 day of September in the year 2024 before me, the undersigned, personally appeared Andrew O. Guglielmi, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public - State of New York

Cheryl A Salem
Notary Public State of New York
Registration No. 01SA0002177
Qualified in Albany County
My Commission Expires March 3, 2027

Cheryl A Salem
Notary Public State of New York
Registration No. 01SA0002177
Qualified in Albany County
My Commission Expires March 3, 2027

SCHEDULE "A" PROPERTY DESCRIPTION

ALL that certain plot, piece or parcel of land situate, lying and being in the City of Yonkers, County of Westchester and State of New York, and bounded and described as follows:

BEGINNING at a point on the easterly side of Alexander Street, distant 385.67 feet as measured in a southerly direction along the easterly side of Alexander Street from the corner formed by the intersection of the southerly side of Ashburton Avenue with the easterly side of Alexander Street;

RUNNING THENCE in an easterly direction on a line having an interior angle of 87 degrees 22 minutes 00 seconds with the easterly side of Alexander Street, a distance of 227 feet to the westerly line of land of the New York Central Railroad;

THENCE in a southerly direction and along the westerly line of land of the New York Central Railroad on a curve to the right having a radius of 2707.48 feet an arc distance of 77.42 (deed) feet 77.45 (actual) feet to the northerly line of land now or formerly of Mary Eliza Saunders;

THENCE in a westerly direction and along the northerly line of land now or formerly of Mary Eliza Saunders, and on a line having an interior angle of 90 degrees 47 minutes 34 seconds with the easterly side of Alexander Street a distance of 209.75 feet to the easterly side of Alexander Street;

THENCE in a northerly direction and along the easterly side of Alexander Street, a distance of 83.08 feet to the point and place of BEGINNING.

Containing 17,381 sq. ft. or 0.399 acres

APPENDIX B – LIST OF SITE CONTACTS

Name	Phone/Email Address
Mures Alexander LLC, President: Ioan Sita	(516) 860-8609 ioan.sita@starrwin.com
NYS Registered Professional Engineer: Robert L. Jackson, P.E.	(973) 738-0782 Robert.Jackson@gza.com
Qualified Environmental Professional Remedial Engineer: Faron W. Moser, CHST (GZA)	(973) 774-3530 or (973) 309-6200 Faron. Moser@gza.com|
NYSDEC Project Manager: Michaela Cochran	(518) 402-9669 Michaela.Cochran@dec.ny.gov
NYSDEC DER Project Manager's Supervisor: Amen Omorogbe	(518) 402-9801 amen.omorogbe@dec.ny.gov
NYSDEC Site Control: Kelly Lewandowski	(518) 402-9569 kelly.lewandowski@dec.ny.gov
NYSDOH Project Manager: Ms. Sarita Wagh	(518) 402-7860 sarita.wagh@health.ny.gov
Westchester County Department of Health Senior Engineer: Gregory Toothill, PE	(914) 864-7299 gatm@westchestercountyny.gov
Westchester County Department of Health: Senior Engineer: Xinxin Li, PE	(914) 564-5490 xqla@westchestercountyny.gov

APPENDIX C – PS&S SOIL BORING LOGS & MONITOING WELL LOGS

Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER MW-GP-4

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
AT TIME OF DRILLING ---
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
0.0						Concrete Pad	
			0			0.5	
			0			(FILL) Dry, dk brown, medium-to-fine SAND, little gravel	
			0				
2.5	MACROCORE	50	0				Sample MW-GP-4-09142017 collected at ~3-5' BGS at 1445.
			0				
			0			4.0	
5.0						(FILL) Wet, dk brown, medium-to-fine SAND, little gravel, trace silt	
			0				
			0			6.5	
7.5	MACROCORE	33	0			(FILL) Wet, red-brown medium-to-fine SAND, little gravel	
			0			8.0	
			0			(FILL) Wet GRAVEL, some cobbles	
10.0						10.0	
			0			(FILL) Dk brown, medium-to-fine SAND, little silt, trace gravel	
			0				
12.5	MACROCORE	73	0			12.5	
			0			(FILL) Brown, fine SAND, little silt, trace gravel	
			0				
15.0						15.0	

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Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER MW-GP-4

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
AT TIME OF DRILLING ---
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
15.0	MACROCORE	0				No Recovery	Large cable observed in the borehole
17.5							
20.0						20.0	

Bottom of borehole at 20.0 feet.

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BORING NUMBER MW-GP-5

Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
▽ **AT TIME OF DRILLING** 4.70 ft
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
0.0							
	MACROCORE	60	0			(FILL) Brown-dk brown, medium-to-fine SAND, trace gravel	
			0				
						2.0	
2.5			0			(FILL) Brown-dk brown, fine SAND, trace gravel and silt	Organics observed
			0			3.5	
						(FILL) Brown-dk brown, coarse-to-medium SAND, trace gravel	
			0			4.0	
						(FILL) Brown, medium SAND, trace gravel	
5.0						▽ 5.0	Groundwater observed at 4.7' BGS
	MACROCORE	70	0			(FILL) Lt brown, coarse-to-medium SAND	
			0			6.0	
						(FILL) Moist, brown-dk brown, medium-to-fine SAND, trace silt	
7.5			0			7.0	
			2.4			(FILL) Moist, dk grey, coarse-to-medium SAND, trace silt	
			5.4			8.0	
			1.5			(FILL) Moist, dk grey, coarse-to-medium SAND, trace silt and gravel	
			1.1			9.0	
10.0			0.3			(FILL) Moist, brown, medium-to-fine SAND, trace silt	
	MACROCORE	70	0			10.0	
			0.5			(FILL) Wet, dk brown, coarse SAND, little gravel	
			0				
			0				
12.5			0	SP-SM		12.0	
			0.5			(SP-SM) Wet, dk brown, medium-to-fine SAND, trace silt	
			8	SP		13.0	Sample MW-GP-5-09142017 collected at ~13-15' BGS at 1200. Mild odor resembling MGP observed
			54.8			(SP) Wet, dk brown, coarse SAND, trace gravel	
			113.2	SW		14.0	
15.0						(SW) Wet, brown, medium SAND, trace silt and gravel	

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Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER MW-GP-5

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
▽ **AT TIME OF DRILLING** 4.70 ft
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
15.0			54.8			(SW) Wet, brown, medium SAND, trace silt and gravel *(continued)*	
			2.9				
			0.5				Minor odor resembling MGP observed
			1.5				
17.5	MACROCORE	47	2.9	SW			
			2.8				
			42.5				
			2.9				
20.0			1.3			20.0	

Bottom of borehole at 20.0 feet.

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BORING NUMBER MW-GP-6

Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
▽ **AT TIME OF DRILLING** 4.70 ft
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
0.0							
	MACROCORE	70	0	SP		(SP) Dry, brown-dk brown, coarse-to-medium SAND, some gravel, tracel silt	
			0				
2.5			1.5				
			0.4				
			0	SP		(SP) Brown medium-to-fine SAND, trace silt	
						4.0	
			0	SP		(SP) Moist, brown-dk brown, coarse-to-medium SAND, some gravel, tracel silt ▽	Groundwater observed at 4.7' BGS
5.0							
	MACROCORE	50	0				
			0				
7.5			2.4				
			5.4				
						9.0	
			1.5			(FILL) Wet brown-dk brown, fine SAND, some silt, trace gravel	
10.0						10.0	
	MACROCORE	80	1.1	SP		(SP) Dry brown medium-to-fine SAND, little gravel, trace silt	
			0.4				
			1.1				
			0.1			12.0	
12.5			3.5			(FILL) Moist, red-brown/brown, SILT, some fine sand	Minor odor resembling MGP observed
			5.6				
			4.8			13.5	
			51.3			(FILL) Moist, dk grey, medium SAND, trace gravel	
			242.5				Sample MW-GP-6-09142017 collected at ~14-16' BGS at 1105. Mild odor resembling MGP
15.0							

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Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER MW-GP-6

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
▽ **AT TIME OF DRILLING** 4.70 ft
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
15.0			17.1			(FILL) Moist, dk grey, medium SAND, trace gravel *(continued)*	observed
			0				
			1.4				
						16.5	
			7.9			(FILL) Moist, dk brown-grey, fine SAND, some silt, trace gravel	
17.5	MACROCORE	47	14				Glass fragments observed
			5.8				
			3				
20.0						20.0	
						Bottom of borehole at 20.0 feet.	Seashell fragments observed

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Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER MW-GP-7

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
▽ **AT TIME OF DRILLING** 5.00 ft
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
0.0						Concrete Pad	
			0			0.5	
						(FILL) Brown, medium-to-fine SAND, trace gravel	
			0			2.0	
2.5	MACROCORE	53	0			(FILL) Moist, dk brown, medium-to-fine SAND, trace silt	Sample MW-GP-7-09142017 collected at ~3-5' BGS at 1640.
			0				
5.0			0			5.0▽	
						(FILL) Wet, dk brown, medium-to-fine SAND, trace silt and gravel	
			0			7.0	
7.5	MACROCORE	45	0			(FILL) Wet, dk grey-black, fine SAND, little wood/organics and glass fragments	
			0				
10.0			0			10.0	
						(FILL) Angular, coarse GRAVEL, some dk brown, medium-to-fine sand, trace cobbles	
			0			12.0	
12.5	MACROCORE	87	0			(FILL) Wet, fine SAND, little gravel, trace silt and cobbles	
			0			14.0	
			0			(FILL) Wet, dk brown-grey, clayey SILT	
						14.5	
15.0						(FILL) Dk brown, silty SAND, trace gravel	
						15.0	

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Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER MW-GP-7

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
▽ **AT TIME OF DRILLING** 5.00 ft
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
15.0							
	MACROCORE		0	SW		(SW) Wet, dk brown, medium-to-fine SAND, trace gravel	
			0				
						17.0	
17.5		100	0	SP		(SP) Wet, dk brown, coarse SAND, some gravel	
			0				
			0				
20.0						20.0	

Bottom of borehole at 20.0 feet.

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Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER SB-GP-14

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
AT TIME OF DRILLING ---
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
0.0						Concrete Slab	
			0			0.5	
						(FILL) Dk brown, coarse-to-medium SAND, little gravel	
			0				
			0				
2.5	MACROCORE	57					
			0				
			0				
5.0						5.0	
			0			(FILL) Moist, dk brown, coarse-to-medium SAND, some lt brown, fine, sand, little gravel, trace silt	Sample SB-GP-14-09142017 collected at ~5-6' BGS at 1555.
			0				
			0			7.0	
7.5	MACROCORE	53				(FILL) Wet, angular gravel, some coarse-to-medium, dk brown sand	
			0				
			0			9.0	
						(FILL) Wet, dk brown, medium-to-fine SAND, trace gravel and silt	
10.0						10.0	
			0			(FILL) Wet, dk brown, medium-to-fine SAND, some gravel, trace glass fragments	
			0				
			0				
12.5	MACROCORE	60					
			0			13.0	
			0			(FILL) Wet, brown-grey, fine SAND, little silt, trace medium-to-fine-sand	
15.0							

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Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER SB-GP-14

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
AT TIME OF DRILLING ---
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
15.0	MACROCORE	40	0			(FILL) Wet, brown-grey, fine SAND, little silt, trace medium-to-fine-sand *(continued)*	
						16.0	
			0			(FILL) Wet, black angular GRAVEL, some brick fragments	
17.5			0				
			0				
			0				
20.0						20.0	

Bottom of borehole at 20.0 feet.

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Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER SB-GP-15

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
AT TIME OF DRILLING ---
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
0.0							
	MACROCORE	60	0			Concrete Pad 0.5	
			60.8			(FILL) Dk brown, fine SAND, some silt 1.0	
			1.6			(FILL) Dk brown, coarse-to-medium SAND, little gravel, trace cobbles	Taffy-like material and odor resembling tar observed
			0.9				
2.5			5.4				
			0.9				
			3				
			7.3				
			38.4				
5.0			28.4			5.0	
	MACROCORE	47	0			(FILL) White GRAVEL 5.5	
			0			(FILL) Wet, dk brown, coarse-to-medium SAND, little gravel, trace silt	
			0				
7.5			0				
			0				
			0				
10.0						10.0	
	MACROCORE	52	0			(FILL) Wet, dk brown, coarse-to-medium SAND, some gravel	
			0				
12.5			0			12.5	
						(FILL) Wet, brown, medium-to-fine SAND, little silt	
			0				
			0				
15.0							

(Continued Next Page)

ENVIRONMENTAL BH - GINT STD US LAB.GDT - 1/18/18 09:36 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\72 ALEXANDER ST.GPJ

Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER SB-GP-15

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
AT TIME OF DRILLING ---
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
15.0	MACROCORE	75	0			(FILL) Wet, brown, medium-to-fine SAND, little silt *(continued)*	
			0			16.5	
						(FILL) Wet, brown, medium-to-fine SAND, little silt, rounded gravel	
17.5			0			17.5	Sample SB-GP-15-09142017 collected at ~17-19' BGS at 1410
						(FILL) Dk brown, medium-to-fine SAND, little silt, trace gravel	
			0			18.5	
				ML		(ML) Wet, Dk brown SILT, little clay, trace fine sand	
			0			19.5	Mild odor resembling MGP observed
20.0				SP		(SP) Wet, dk brown, coarse SAND 20.0	

Bottom of borehole at 20.0 feet.

ENVIRONMENTAL BH - GINT STD US LAB.GDT - 1/18/18 09:36 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\72 ALEXANDER ST.GPJ

Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER SB-GP-16

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
AT TIME OF DRILLING ---
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
0.0							
2.5	MACROCORE	50	0 0 0 0 0			(FILL) Dry, dk brown-grey, coarse-to-medium SAND, some gravel	Sample SB-GP-16-09142017 collected at ~3-5' BGS at 1230.
4.0						(FILL) Brown-dk brown, medium-to-fine SAND	
5.0							
7.5	MACROCORE	30	0 0 0 0 0			(FILL) Dk brown-grey, coarse-to-medium SAND, some gravel	
8.5						(FILL) Moist, dk brown-grey, coarse-to-medium SAND, some gravel	
10.0							
12.5	MACROCORE	0				No Recovery	
15.0							

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ENVIRONMENTAL BH - GINT STD US LAB.GDT - 1/18/18 09:36 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\72 ALEXANDER ST.GPJ

Paulus, Sarkowski and Sartor
1 Larkin Plaza, 2nd Floor
Yonkers, New York 10701

BORING NUMBER SB-GP-16

CLIENT Fondak Enterprises, LLC
PROJECT NAME 72 Alexander Street
PROJECT NUMBER 05794-0001
PROJECT LOCATION Yonkers, NY
DATE STARTED 9/14/17 **COMPLETED** 9/14/17
GROUND ELEVATION _____ **HOLE SIZE** inches
DRILLING CONTRACTOR ADT
GROUND WATER LEVELS:
DRILLING METHOD 6610 DT Geoprobe/track mounted
AT TIME OF DRILLING ---
LOGGED BY Scott Caporizzo **CHECKED BY** Eric Stucker
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	PID READING (PPM)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	REMARKS
15.0							
	MACROCORE	42	0			(FILL) Brown-dk brown, coarse SAND, some gravel	
						16.0	
			0			(FILL) Wet, dk brown-grey, coarse SAND, some gravel	
						17.0	
17.5			0			(FILL) Dk brown, coarse-to-medium SAND, trace silt and gravel	
						18.0	
			0			(FILL) Wet, dk brown-grey, medium-to-fine SAND, little silt	
			0				
20.0						20.0	

Bottom of borehole at 20.0 feet.

ENVIRONMENTAL BH - GINT STD US LAB.GDT - 1/18/18 09:36 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\72 ALEXANDER ST.GPJ

APPENDIX D – GZA SOIL BORING LOGS & MONITOING WELL LOGS

TEST BORING LOG

GZA GeoEnvironmental, Inc.

Client:	Mures Alexander LLC	EXPLORATION NO.	SB-1/TW-1
Project:	72 Alexander Street	SHEET	1 of 2
City, State:	Yonkers, New York	GZA PROJECT NO.	12.0077558.00

LOGGED BY:	C. DiGennaro	RIG TYPE:	Geoprobe	BORING COORDINATES	N	E	
DRILLING CO:	EPHASE2	MODEL:	6712DT	GROUND SURFACE EL.(FT)		DATUM (S)	
FOREMAN:	Lukas Reiss	METHOD:	*Direct Push*	FINAL BORING DEPTH (FT)	15 feet	DATE START/FINISH	4/18/23

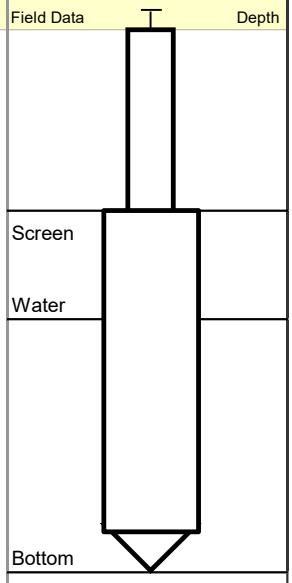
HAMMER TYPE:	*AUTOMATIC / DONUT / SAFETY SLIDING*		
HAMMER WEIGHT:		TYPE SAMPLER:	
HAMMER FALL:		SAMPLER O.D.: 1.5"	
AUGER OR CASING O.D./I.D.:		SAMPLER LENGT 5' sleeves	
CASING SIZE:			

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME
4/18/23	9:30 AM	8.40'	2"	

DEPTH feet	SAMPLE NO	SAMPLE DEPTH (feet)	PEN / REC (inch / inch)	RECOVERY (%)	PID Reading (ppm)	SAMPLE DESCRIPTION & IDENTIFICATION MODIFIED BURMISTER	REMARK
					0.0	0.0-5.0: Fine to medium dark brown sand, trace silt, moist at 4'.	
					0.0		
			41"	68.3	0.0		
		4.0-6.0			0.0		
5					0.0	5.0-6.0: Dark brown fine sand, slightly moist	
					0.0	6.0-9.0: Gray/brown silt w/trace clay, wet at 8.0', GW at 8.40'.	
			43"	71.7	0.0		
					0.0		
					0.0	9.0-10: Dark brown and light brown fine sand, wet 9-10'.	
10					0.0		
15							
20							
25							
30							

PROFILE



GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

PFAS-free sampling sleeves and wells.
SB-1 sampled at 9:25, PID: 0.0 PPM.
TW-1 sampled at 12:40, 12' bgs, low-flow sampling.
TW-101 sampled at 12:45, , 12' bgs, low-flow sampling.

EXPLORATION NO.

TEST BORING LOG

GZA GeoEnvironmental, Inc.

Client:	Mures Alexander LLC	EXPLORATION NO.	SB-2/TW-2
Project:	72 Alexander Street	SHEET	2 of 2
City, State:	Yonkers, New York	GZA PROJECT NO.	12.0077558.00

LOGGED BY:	C. DiGennaro	RIG TYPE:	Geoprobe	BORING COORDINATES	N	E	
DRILLING CO:	EPHASE2	MODEL:	6712DT	GROUND SURFACE EL.(FT)		DATUM (S)	
FOREMAN:	Lukas Reiss	METHOD:	*Direct Push*	FINAL BORING DEPTH (FT)	15 feet	DATE START/FINISH	4/18/23

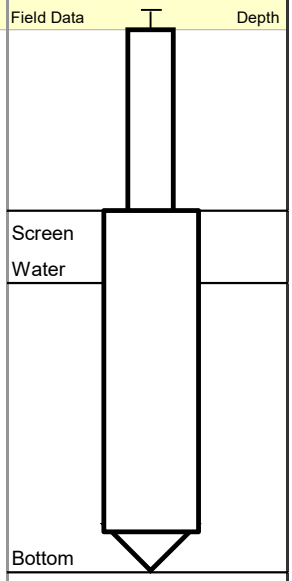
HAMMER TYPE:	*AUTOMATIC / DONUT / SAFETY SLIDING*		
HAMMER WEIGHT:		TYPE SAMPLER:	
HAMMER FALL:		SAMPLER O.D.:	1.5"
AUGER OR CASING O.D./I.D.:		SAMPLER LENGT	5' sleeves
CASING SIZE:			

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME
4/18/23	13:30 PM	7.20'	2"	

DEPTH feet	SAMPLE NO	DEPTH (feet)	PEN / REC (inch / inch)	RECOVERY (%)	PID Reading (ppm)	SAMPLE DESCRIPTION & IDENTIFICATION MODIFIED BURMISTER	REMARK
					0.0	0.0-2.0: Concrete, mixed white/gray cobble.	
					0.0		
		3.0-5.0	38"	63.3	0.0	2.0-5.0: Fine brown to dark brown sand, cobble throughout, moist at 4.5'.	
					0.0		
5					0.0		
					0.0	5.0-7.0: Concrete, mixed white/gray cobble	
			42"	70.0	0.0		
					0.0	7.0-10.0: Wet at 7', DTW at 7.2', fine to medium brown to dark brown sand, trace gravel.	
					0.0		
10					0.0		
15							
20							
25							
30							

PROFILE



GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

PFAS-free sampling sleeves and wells.
SB-2 sampled at 11:15, PID: 0.0 PPM.
SB-201 sampled at 11:20, PID 0.0 PPM.
TW-2 sampled at 15:00, 12' bgs, low-flow sampling.

EXPLORATION NO.

APPENDIX E – PS&S SOIL, GROUNDWATER, AND SOIL VAPOR SAMPLE RESULTS

Table 2
2017 Remedial Investigation Soil Analytical Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		Part375 Restricted Residential (mg/Kg)	SB-GP-14_09142017			SB-GP-15_09142017			SB-GP-16_09142017			MW-GP-4_09142017			MW-GP-5_09142017			MW-GP-6_09142017			MW-GP-7_09142017			UST-A			UST-B		
LAB ID:			AD00089-001			AD00089-002			AD00089-003			AD00089-004			AD00089-005			AD00089-006			AD00089-007			AD00038-001			AD00038-002		
COLLECTION DATE:			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/13/2017			9/13/2017		
SAMPLE MATRIX:			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
SAMPLE DEPTH: (ft BGS)			5-6			17-19			3-5			3-5			13-15			14-16			3-5			4.5 (BSS)			3 (BSS)		
SAMPLE UNITS:			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg		
Analyte	**CAS Number**		**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
VOLATILE ORGANICS																													
:TotalVolatileTic	TOTVOLTIC	NA	0.68	J	NA	59.0	J	NA	ND		NA	ND		NA	21.0	J	NA	4,400	J	NA	ND		NA	0.054	J	NA	ND		NA
1,1,1-Trichloroethane	71-55-6	100	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,1,2,2-Tetrachloroethane	79-34-5	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,1,2-Trichloro-1,2,2-trifluoroe	76-13-1	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,1,2-Trichloroethane	79-00-5	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,1-Dichloroethane	75-34-3	26	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,1-Dichloroethene	75-35-4	100	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,2,3-Trichlorobenzene	87-61-6	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,2,4-Trichlorobenzene	120-82-1	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,2-Dibromo-3-chloropropane	96-12-8	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,2-Dibromoethane	106-93-4	NA	ND		0.00081	ND		0.21	ND		0.00083	ND		0.00091	ND		0.071	ND		1.2	ND		0.00029	ND		0.00092	ND		0.0012
1,2-Dichlorobenzene	95-50-1	100	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,2-Dichloroethane	107-06-2	3.1	ND		0.0016	ND		0.11	ND		0.0017	ND		0.0018	ND		0.035	ND		0.62	ND		0.00057	ND		0.0018	ND		0.0024
1,2-Dichloropropane	78-87-5	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,3-Dichlorobenzene	541-73-1	49	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,4-Dichlorobenzene	106-46-7	13	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
1,4-Dioxane	123-91-1	13	ND		0.081	ND		11	ND		0.083	ND		0.091	ND		3.5	ND		62	ND		0.029	ND		0.092	ND		0.12
2-Butanone	78-93-3	100	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
2-Hexanone	591-78-6	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
4-Methyl-2-pentanone	108-10-1	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Acetone	67-64-1	100	0.076		0.0081	ND		1.1	ND		0.0083	ND		0.0091	ND		0.35	ND		6.2	ND		0.0029	ND		0.0092	ND		0.012
Benzene	71-43-2	4.8	ND		0.00081	ND		0.11	ND		0.00083	ND		0.00091	ND		0.035	180		0.62	ND		0.00029	ND		0.00092	ND		0.0012
Bromochloromethane	74-97-5	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Bromodichloromethane	75-27-4	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Bromoform	75-25-2	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Bromomethane	74-83-9	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Carbon disulfide	75-15-0	NA	ND		0.0016	0.35		0.21	ND		0.0017	ND		0.0018	ND		0.071	5.8		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Carbon tetrachloride	56-23-5	2.4	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Chlorobenzene	108-90-7	100	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Chloroethane	75-00-3	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Chloroform	67-66-3	49	ND		0.0016	ND		0.21	ND		0.0017	0.002		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Chloromethane	74-87-3	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
cis-1,2-Dichloroethene	156-59-2	100	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
cis-1,3-Dichloropropene	10061-01-5	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Cyclohexane	110-82-7	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	0.13		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Dibromochloromethane	124-48-1	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Dichlorodifluoromethane	75-71-8	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Ethylbenzene	100-41-4	41	ND		0.00081	0.3		0.21	ND		0.00083	ND		0.00091	ND		0.071	200		1.2	ND		0.00029	ND		0.00092	ND		0.0012
Isopropylbenzene	98-82-8	NA	ND		0.00081	ND		0.21	ND		0.00083	ND		0.00091	0.31		0.071	3.9		1.2	ND		0.00029	ND		0.00092	ND		0.0012
m&p-Xylenes	179601-23-1	100	ND		0.00081	0.39		0.21	ND		0.00083	ND		0.00091	ND		0.071	210		1.2	ND		0.00029	0.0016		0.00092	0.003		0.0012
Methyl Acetate	79-20-9	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Methylcyclohexane	108-87-2	NA	ND		0.0016	0.49		0.21	ND		0.0017	ND		0.0018	1.3		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Methylene chloride	75-09-2	100	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	0.0012		0.00057	0.0047		0.0018	ND		0.0024
Methyl-t-butyl ether	1634-04-4	100	ND		0.00081	ND		0.11	ND		0.00083	ND		0.00091	ND		0.035	ND		0.62	ND		0.00029	ND		0.00092	ND		0.0012
o-Xylene	95-47-6	100	ND		0.00081	ND		0.21	ND		0.00083	ND		0.00091	ND		0.071	79		1.2	ND		0.00029	0.0013		0.00092	0.002		0.0012
Styrene	100-42-5	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Tetrachloroethene	127-18-4	19	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Toluene	108-88-3	100	ND		0.00081	ND		0.21	ND		0.00083	ND		0.00091	ND		0.071	37		1.2	ND		0.00029	ND		0.00092	ND		0.0012
trans-1,2-Dichloroethene	156-60-5	100	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
trans-1,3-Dichloropropene	10061-02-6	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Trichloroethene	79-01-6	21	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Trichlorofluoromethane	75-69-4	NA	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Vinyl chloride	75-01-4	0.9	ND		0.0016	ND		0.21	ND		0.0017	ND		0.0018	ND		0.071	ND		1.2	ND		0.00057	ND		0.0018	ND		0.0024
Xylenes (Total)	1330-20-7	100	ND		0.00081	0.39		0.21	ND		0.00083	ND		0.00091	ND		0.071	290		1.2	ND		0.00029	0.0029		0.00092	0.005		0.0012

NOTES:

Restricted Residential Soil Cleanup Objectives (RRES SCOs) were derived from the NYSDEC 6 N 375, Section 365-6-8, Soil Cleanup Objectives tables, Table 375-6-8(b), effective December 14, 2006.
ND = Not Detected
NA = Not Applicable
mg/Kg = milligram per kilogram
Q = Data Qualifier
J = Indicates the value is estimated because it is either a Tentatively Identified Compound (TIC) or the reported concentration is greater than the MDL but less than the RL.
Result exceeds at least one criterion

Table 2
2017 Remedial Investigation Soil Analytical Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		Part375 Restricted Residential (mg/Kg)	UST-C AD00038-003			UST-D AD00038-004			UST-E AD00038-005			SD-1_09152017 AD00089-009			SD-2-09222017 AD00208-001			SURF-1_09152017 AD00089-011			SURF-2_09152017 AD00089-012			SURF-3_09152017 AD00089-013		
LAB ID:																										
COLLECTION DATE:			9/13/2017			9/13/2017			9/13/2017			9/15/2017			9/22/2017			9/15/2017			9/15/2017			9/15/2017		
SAMPLE MATRIX:			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
SAMPLE DEPTH: (ft BGS)			3 (BSS)			3.5 (BSS)			3 (BSS)			0-0.5			0-0.5			0-0.5			0-0.5			0-0.5		
SAMPLE UNITS:			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg		
Analyte	CAS Number		Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
VOLATILE ORGANICS																										
:TotalVolatileTic	TOTVOLTIC	NA	ND		NA	ND		NA	0.17	J	NA	0.0053	J	NA	ND		NA	0.5	J	NA	0.059	J	NA	0.087	J	NA
1,1,1-Trichloroethane	71-55-6	100	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,1,2,2-Tetrachloroethane	79-34-5	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,1,2-Trichloro-1,2,2-trifluoroe	76-13-1	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,1,2-Trichloroethane	79-00-5	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,1-Dichloroethane	75-34-3	26	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,1-Dichloroethene	75-35-4	100	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,2,3-Trichlorobenzene	87-61-6	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,2,4-Trichlorobenzene	120-82-1	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,2-Dibromo-3-chloropropane	96-12-8	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,2-Dibromoethane	106-93-4	NA	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011
1,2-Dichlorobenzene	95-50-1	100	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,2-Dichloroethane	107-06-2	3.1	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,2-Dichloropropane	78-87-5	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,3-Dichlorobenzene	541-73-1	49	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,4-Dichlorobenzene	106-46-7	13	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
1,4-Dioxane	123-91-1	13	ND		0.098	ND		0.11	ND		0.091	ND		0.17	ND		0.16	ND		0.1	ND		0.11	ND		0.11
2-Butanone	78-93-3	100	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
2-Hexanone	591-78-6	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
4-Methyl-2-pentanone	108-10-1	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Acetone	67-64-1	100	ND		0.0098	ND		0.011	ND		0.0091	ND		0.017	ND		0.016	ND		0.01	ND		0.011	ND		0.011
Benzene	71-43-2	4.8	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011
Bromochloromethane	74-97-5	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Bromodichloromethane	75-27-4	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Bromoform	75-25-2	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Bromomethane	74-83-9	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Carbon disulfide	75-15-0	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Carbon tetrachloride	56-23-5	2.4	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Chlorobenzene	108-90-7	100	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Chloroethane	75-00-3	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Chloroform	67-66-3	49	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Chloromethane	74-87-3	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
cis-1,2-Dichloroethene	156-59-2	100	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
cis-1,3-Dichloropropene	10061-01-5	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Cyclohexane	110-82-7	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Dibromochloromethane	124-48-1	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Dichlorodifluoromethane	75-71-8	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Ethylbenzene	100-41-4	41	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011
Isopropylbenzene	98-82-8	NA	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011
m&p-Xylenes	179601-23-1	100	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011
Methyl Acetate	79-20-9	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Methylcyclohexane	108-87-2	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Methylene chloride	75-09-2	100	0.0021		0.002	ND		0.0022	ND		0.0018	0.014		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Methyl-t-butyl ether	1634-04-4	100	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011
o-Xylene	95-47-6	100	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011
Styrene	100-42-5	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Tetrachloroethene	127-18-4	19	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Toluene	108-88-3	100	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011
trans-1,2-Dichloroethene	156-60-5	100	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
trans-1,3-Dichloropropene	10061-02-6	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Trichloroethene	79-01-6	21	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Trichlorofluoromethane	75-69-4	NA	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Vinyl chloride	75-01-4	0.9	ND		0.002	ND		0.0022	ND		0.0018	ND		0.0034	ND		0.0032	ND		0.0021	ND		0.0022	ND		0.0022
Xylenes (Total)	1330-20-7	100	ND		0.00098	ND		0.0011	ND		0.00091	ND		0.0017	ND		0.0016	ND		0.001	ND		0.0011	ND		0.0011

NOTES:

Restricted Residential Soil Cleanup Objectives (RRES SCOs) were derived from the NYSDEC 6 N 375, Section 365-6-8, Soil Cleanup Objectives tables, Table 375-6-8(b), effective December 14, 2006.
ND = Not Detected
NA = Not Applicable
mg/Kg = milligram per kilogram
Q = Data Qualifier
J = Indicates the value is estimated because it is either a Tentatively Identified Compound (TIC) or the reported concentration is greater than the MDL but less than the RL.
Result exceeds at least one criterion

Table 2
2017 Remedial Investigation Soil Analytical Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		Part375 Restricted Residential (mg/Kg)	SB-GP-14_09142017			SB-GP-15_09142017			SB-GP-16_09142017			MW-GP-4_09142017			MW-GP-5_09142017			MW-GP-6_09142017			MW-GP-7_09142017			UST-A			UST-B		
LAB ID:			AD00089-001			AD00089-002			AD00089-003			AD00089-004			AD00089-005			AD00089-006			AD00089-007			AD00038-001			AD00038-002		
COLLECTION DATE:			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/13/2017			9/13/2017		
SAMPLE MATRIX:			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
SAMPLE DEPTH: (ft BGS)			5-6			17-19			3-5			3-5			13-15			14-16			3-5			4.5 (BSS)			3 (BSS)		
SAMPLE UNITS:			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg		
Analyte	**CAS Number**		**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
SEMIVOLATILE ORGANICS																													
:TotalSemiVolatileTic	TOTSEMTIC	NA	50.0	J	NA	220.0	J	NA	68.0	J	NA	96.0	J	NA	73.0	J	NA	210.0	J	NA	55.0	J	NA	69.0	J	NA	82	J	NA
1,1'-Biphenyl	92-52-4	NA	ND		0.04	8		3.8	ND		0.19	ND		0.2	ND		0.11	48		19	ND		0.039	ND		0.13	ND		0.19
1,2,4,5-Tetrachlorobenzene	95-94-3	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
1,2,4-Trichlorobenzene	120-82-1	NA	ND		0.04																								
1,2-Dichlorobenzene	95-50-1	100	ND		0.04																								
1,2-Diphenylhydrazine	122-66-7	NA	ND		0.04																								
1,3-Dichlorobenzene	541-73-1	49	ND		0.04																								
1,4-Dichlorobenzene	106-46-7	13	ND		0.04																								
2,3,4,6-Tetrachlorophenol	58-90-2	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
2,4,5-Trichlorophenol	95-95-4	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
2,4,6-Trichlorophenol	88-06-2	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
2,4-Dichlorophenol	120-83-2	NA	ND		0.01	ND		0.94	ND		0.047	ND		0.05	ND		0.028	ND		4.8	ND		0.0097	ND		0.032	ND		0.048
2,4-Dimethylphenol	105-67-9	NA	0.013		0.01	ND		0.94	ND		0.047	ND		0.05	ND		0.028	ND		4.8	ND		0.0097	ND		0.032	ND		0.048
2,4-Dinitrophenol	51-28-5	NA	ND		0.2	ND		19	ND		0.95	ND		1	ND		0.57	ND		97	ND		0.19	ND		0.64	ND		0.97
2,4-Dinitrotoluene	121-14-2	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
2,6-Dinitrotoluene	606-20-2	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
2-Chloronaphthalene	91-58-7	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
2-Chlorophenol	95-57-8	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
2-Methylnaphthalene	91-57-6	NA	0.15		0.04	30		3.8	ND		0.19	0.28		0.2	0.35		0.11	66		19	ND		0.039	0.16		0.13	0.32		0.19
2-Methylphenol	95-48-7	100	ND		0.01	ND		0.94	ND		0.047	ND		0.05	ND		0.028	ND		4.8	ND		0.0097	ND		0.032	ND		0.048
2-Nitroaniline	88-74-4	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
2-Nitrophenol	88-75-5	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
3&4-Methylphenol	106-44-5	100	ND		0.01	ND		0.94	ND		0.047	ND		0.05	ND		0.028	ND		4.8	ND		0.0097	ND		0.032	ND		0.048
3,3'-Dichlorobenzidine	91-94-1	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
3-Nitroaniline	99-09-2	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
4,6-Dinitro-2-methylphenol	534-52-1	NA	ND		0.2	ND		19	ND		0.95	ND		1	ND		0.57	ND		97	ND		0.19	ND		0.64	ND		0.97
4-Bromophenyl-phenylether	101-55-3	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
4-Chloro-3-methylphenol	59-50-7	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
4-Chloroaniline	106-47-8	NA	ND		0.01	ND		0.94	ND		0.047	ND		0.05	ND		0.028	ND		4.8	ND		0.0097	ND		0.032	ND		0.048
4-Chlorophenyl-phenylether	7005-72-3	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
4-Nitroaniline	100-01-6	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
4-Nitrophenol	100-02-7	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Acenaphthene	83-32-9	100	0.073		0.04	45		3.8	ND		0.19	1.6		0.2	1.3		0.11	ND		19	ND		0.039	0.67		0.13	1.3		0.19
Acenaphthylene	208-96-8	100	0.052		0.04	6.4		3.8	ND		0.19	0.54		0.2	0.2		0.11	25		19	ND		0.039	0.19		0.13	0.45		0.19
Acetophenone	98-86-2	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Anthracene	120-12-7	100	0.11		0.04	43		3.8	0.29		0.19	4.2		0.2	1.3		0.11	39		19	ND		0.039	1.3		0.13	2.6		0.19
Atrazine	1912-24-9	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Benzaldehyde	100-52-7	NA	0.22		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Benzidine	92-87-5	NA	ND		0.04																								
Benzo[a]anthracene	56-55-3	1	0.24		0.04	24		3.8	0.97		0.19	7.3		0.2	1.2		0.11	34		19	0.089		0.039	3.1		0.13	6		0.19
Benzo[a]pyrene	50-32-8	1	0.14		0.04	22		3.8	0.89		0.19	6.3		0.2	1		0.11	30		19	0.1		0.039	2.8		0.13	5.3		0.19
Benzo[b]fluoranthene	205-99-2	1	0.2		0.04	20		3.8	1.2		0.19	7.4		0.2	1.2		0.11	34		19	0.26		0.039	3.5		0.13	6.5		0.19
Benzo[g,h,i]perylene	191-24-2	100	0.072		0.04	16		3.8	0.71		0.19	4.6		0.2	0.78		0.11	22		19	0.14		0.039	2.1		0.13	3.8		0.19
Benzo[k]fluoranthene	207-08-9	3.9	0.061		0.04	5.7		3.8	0.32		0.19	2.6		0.2	0.3		0.11	ND		19	0.055		0.039	1.4		0.13	2.6		0.19
Benzoic acid	65-85-0	NA	0.32		0.2																								
Benzyl alcohol	100-51-6	NA	ND		0.04																								
bis(2-Chloroethoxy)methane	111-91-1	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
bis(2-Chloroethyl)ether	111-44-4	NA	ND		0.01	ND		0.94	ND		0.047	ND		0.05	ND		0.028	ND		4.8	ND		0.0097	ND		0.032	ND		0.048
bis(2-Chloroisopropyl)ether	108-60-1	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
bis(2-Ethylhexyl)phthalate	117-81-7	NA	0.52		0.04	ND		3.8	ND		0.19	0.24		0.2	ND		0.11	ND		19	0.048		0.039	ND		0.13	ND		0.19
Butylbenzylphthalate	85-68-7	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Caprolactam	105-60-2	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Carbazole	86-74-8	NA	ND		0.04	ND		3.8	ND		0.19	1.2		0.2	ND		0.11	ND		19	ND		0.039	0.46		0.13	0.88		0.19
Chrysene	218-01-9	3.9	0.27		0.04	24		3.8	0.99		0.19	7.1		0.2	1.1		0.11	34		19	0.14		0.039	3		0.13	6.1		0.19
Dibenzo[a,h]anthracene	53-70-3	0.33	ND		0.04	ND		3.8	0.2		0.19	1.2		0.2	0.19		0.11	ND		19	0.058		0.039	0.67		0.13	1.2		0.19
Dibenzofuran	132-64-9	59	0.052		0.01	1.4		0.94	ND		0.047	1.1		0.05	0.058		0.028	ND		4.8	ND		0.0097	0.33		0.032	0.75		0.048
Diethylphthalate	84-66-2	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Dimethylphthalate	131-11-3	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Di-n-butylphthalate	84-74-2	NA	0.067		0.01	ND		0.94	ND		0.047	ND		0.05	ND		0.028	ND		4.8	ND		0.0097	ND		0.032	ND		0.048
Di-n-octylphthalate	117-84-0	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Fluoranthene	206-44-0	100	0.45		0.04	50		3.8	1.5		0.19	15		0.2	2.3		0.11	85		19	0.11		0.039	5.7		0.13	11		0.19
Fluorene	86-73-7	100	0.077		0.04	31		3.8	ND		0.19	1.4		0.2	1		0.11	48		19	ND		0.039	0.55		0.13	1		0.19
Hexachlorobenzene	118-74-1	1.2	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Hexachlorobutadiene	87-68-3	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Hexachlorocyclopentadiene	77-47-4	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Hexachloroethane	67-72-1	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Indeno[1,2,3-cd]pyrene	193-39-5	0.5	0.064		0.04	11		3.8	0.58		0.19	4		0.2	0.62		0.11	ND		19	0.12		0.039	1.9		0.13	3.4		0.19
Isophorone	78-59-1	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Naphthalene	91-20-3	100	0.34		0.01	190		0.94	0.16		0.047	0.42		0.05	0.45		0.028	1600		4.8	0.019		0.0097	0.32		0.032	0.71		0.048
Nitrobenzene	98-95-3	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
N-Nitrosodimethylamine	62-75-9	NA	ND		0.04																								
N-Nitroso-di-n-propylamine	621-64-7	NA	ND		0.01	ND		0.94	ND		0.047	ND		0.05	ND		0.028	ND		4.8	ND		0.0097	ND		0.032	ND		0.048
N-Nitrosodiphenylamine	86-30-6	NA	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Pentachlorophenol	87-86-5	6.7	ND		0.2	ND		19	ND		0.95	ND		1	ND		0.57	ND		97	ND		0.19	ND		0.64	ND		0.97
Phenanthrene	85-01-8	100	0.64		0.04	120		3.8	0.9		0.19	16		0.2	4.4		0.11	190		19	0.043		0.039	5		0.13	9.9		0.19
Phenol	108-95-2	100	ND		0.04	ND		3.8	ND		0.19	ND		0.2	ND		0.11	ND		19	ND		0.039	ND		0.13	ND		0.19
Pyrene	129-00-0	100	0.58		0.04	78		3.8	1.9		0.19	18		0.2	3.2		0.11	130		19	0.1		0.039	6.2		0.13	12		0.19
Pyridine	110-86-1	NA	ND		0.04																								

NOTES:

Restricted Residential Soil Cleanup Objectives (RRES SCOs) were derived from the NYSDEC 6 N 375, Section 365-6-8, Soil Cleanup Objectives tables, Table 375-6-8(b), effective December 14, 2006.
ND = Not Detected
NA = Not Applicable
mg/Kg = milligram per kilogram
Q = Data Qualifier
J = Indicates the value is estimated because it is either a Tentatively Identified Compound (TIC) or the reported concentration is greater than the MDL but less than the RL.
Result exceeds at least one criterion

Table 2
2017 Remedial Investigation Soil Analytical Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		Part375 Restricted Residential (mg/Kg)	UST-C			UST-D			UST-E			SD-1_09152017			SD-2-09222017			SURF-1_09152017			SURF-2_09152017			SURF-3_09152017		
LAB ID:			AD00038-003			AD00038-004			AD00038-005			AD00089-009			AD00208-001			AD00089-011			AD00089-012			AD00089-013		
COLLECTION DATE:			9/13/2017			9/13/2017			9/13/2017			9/15/2017			9/22/2017			9/15/2017			9/15/2017			9/15/2017		
SAMPLE MATRIX:			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
SAMPLE DEPTH: (ft BGS)			3 (BSS)			3.5 (BSS)			3 (BSS)			0-0.5			0-0.5			0-0.5			0-0.5			0-0.5		
SAMPLE UNITS:			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg		
Analyte	CAS Number		Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
SEMIVOLATILE ORGANICS																										
:TotalSemiVolatileTic	TOTSEMTIC	NA	76.0	J	NA	71.0	J	NA	65.0	J	NA	290.0	J	NA	200.0	J	NA	170.0	J	NA	79.0	J	NA	57.0	J	NA
1,1'-Biphenyl	92-52-4	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
1,2,4,5-Tetrachlorobenzene	95-94-3	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
1,2,4-Trichlorobenzene	120-82-1	NA													ND		2.3									
1,2-Dichlorobenzene	95-50-1	100													ND		2.3									
1,2-Diphenylhydrazine	122-66-7	NA													ND		2.3									
1,3-Dichlorobenzene	541-73-1	49													ND		2.3									
1,4-Dichlorobenzene	106-46-7	13													ND		2.3									
2,3,4,6-Tetrachlorophenol	58-90-2	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2,4,5-Trichlorophenol	95-95-4	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2,4,6-Trichlorophenol	88-06-2	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2,4-Dichlorophenol	120-83-2	NA	ND		0.047	ND		0.05	ND		0.029	ND		0.27	ND		0.57	ND		0.099	ND		0.092	ND		0.092
2,4-Dimethylphenol	105-67-9	NA	ND		0.047	ND		0.05	ND		0.029	ND		0.27	ND		0.57	ND		0.099	ND		0.092	ND		0.092
2,4-Dinitrophenol	51-28-5	NA	ND		0.95	ND		0.99	ND		0.59	ND		5.5	ND		11	ND		2	ND		1.8	ND		1.8
2,4-Dinitrotoluene	121-14-2	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2,6-Dinitrotoluene	606-20-2	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2-Chloronaphthalene	91-58-7	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2-Chlorophenol	95-57-8	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2-Methylnaphthalene	91-57-6	NA	0.26		0.19	ND		0.2	0.24		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2-Methylphenol	95-48-7	100	ND		0.047	ND		0.05	ND		0.029	ND		0.27	ND		0.57	ND		0.099	ND		0.092	ND		0.092
2-Nitroaniline	88-74-4	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
2-Nitrophenol	88-75-5	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
3&4-Methylphenol	106-44-5	100	ND		0.047	0.073		0.05	ND		0.029	ND		0.27	ND		0.57	ND		0.099	ND		0.092	ND		0.092
3,3'-Dichlorobenzidine	91-94-1	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
3-Nitroaniline	99-09-2	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
4,6-Dinitro-2-methylphenol	534-52-1	NA	ND		0.95	ND		0.99	ND		0.59	ND		5.5	ND		11	ND		2	ND		1.8	ND		1.8
4-Bromophenyl-phenylether	101-55-3	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
4-Chloro-3-methylphenol	59-50-7	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
4-Chloroaniline	106-47-8	NA	ND		0.047	ND		0.05	ND		0.029	ND		0.27	ND		0.57	ND		0.099	ND		0.092	ND		0.092
4-Chlorophenyl-phenylether	7005-72-3	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
4-Nitroaniline	100-01-6	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
4-Nitrophenol	100-02-7	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Acenaphthene	83-32-9	100	1.4		0.19	ND		0.2	0.87		0.12	1.4		1.1	2.8		2.3	ND		0.4	ND		0.37	ND		0.37
Acenaphthylene	208-96-8	100	0.32		0.19	0.5		0.2	0.19		0.12	ND		1.1	ND		2.3	ND		0.4	0.42		0.37	ND		0.37
Acetophenone	98-86-2	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Anthracene	120-12-7	100	3		0.19	0.51		0.2	1.6		0.12	2.9		1.1	4.8		2.3	ND		0.4	0.57		0.37	ND		0.37
Atrazine	1912-24-9	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Benzaldehyde	100-52-7	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Benzidine	92-87-5	NA													ND		2.3									
Benzo[a]anthracene	56-55-3	1	4.8		0.19	2.3		0.2	3		0.12	8.9		1.1	10		2.3	0.72		0.4	2		0.37	0.68		0.37
Benzo[a]pyrene	50-32-8	1	4.1		0.19	2.5		0.2	2.5		0.12	8.1		1.1	7.7		2.3	0.72		0.4	1.8		0.37	0.66		0.37
Benzo[b]fluoranthene	205-99-2	1	4.9		0.19	3.3		0.2	3.1		0.12	11		1.1	9.6		2.3	1.1		0.4	2.5		0.37	1.2		0.37
Benzo[g,h,i]perylene	191-24-2	100	2.7		0.19	1.9		0.2	1.6		0.12	7.3		1.1	5.8		2.3	0.73		0.4	1.5		0.37	0.7		0.37
Benzo[k]fluoranthene	207-08-9	3.9	1.7		0.19	0.94		0.2	0.9		0.12	2.9		1.1	3.3		2.3	0.46		0.4	0.97		0.37	ND		0.37
Benzoic acid	65-85-0	NA													ND		11									
Benzyl alcohol	100-51-6	NA													ND		2.3									
bis(2-Chloroethoxy)methane	111-91-1	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
bis(2-Chloroethyl)ether	111-44-4	NA	ND		0.047	ND		0.05	ND		0.029	ND		0.27	ND		0.57	ND		0.099	ND		0.092	ND		0.092
bis(2-Chloroisopropyl)ether	108-60-1	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
bis(2-Ethylhexyl)phthalate	117-81-7	NA	ND		0.19	ND		0.2	ND		0.12	8.6		1.1	14		2.3	0.43		0.4	ND		0.37	0.48		0.37
Butylbenzylphthalate	85-68-7	NA	ND		0.19	ND		0.2	ND		0.12	3.3		1.1	11		2.3	ND		0.4	ND		0.37	1.1		0.37
Caprolactam	105-60-2	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Carbazole	86-74-8	NA	1.2		0.19	ND		0.2	0.4		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Chrysene	218-01-9	3.9	4.6		0.19	2.5		0.2	2.9		0.12	9.3		1.1	10		2.3	0.75		0.4	2.1		0.37	0.78		0.37
Dibenzo[a,h]anthracene	53-70-3	0.33	0.82		0.19	0.54		0.2	0.46		0.12	2		1.1	ND		2.3	ND		0.4	0.46		0.37	ND		0.37
Dibenzofuran	132-64-9	59	0.78		0.047	0.14		0.05	0.39		0.029	0.35		0.27	0.94		0.57	ND		0.099	ND		0.092	ND		0.092
Diethylphthalate	84-66-2	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Dimethylphthalate	131-11-3	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Di-n-butylphthalate	84-74-2	NA	ND		0.047	ND		0.05	ND		0.029	1.8		0.27	2.5		0.57	ND		0.099	ND		0.092	ND		0.092
Di-n-octylphthalate	117-84-0	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Fluoranthene	206-44-0	100	9.6		0.19	3.2		0.2	5.9		0.12	14		1.1	19		2.3	1.1		0.4	3.2		0.37	1.2		0.37
Fluorene	86-73-7	100	1.4		0.19	ND		0.2	0.78		0.12	ND		1.1	2.3		2.3	ND		0.4	ND		0.37	ND		0.37
Hexachlorobenzene	118-74-1	1.2	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Hexachlorobutadiene	87-68-3	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Hexachlorocyclopentadiene	77-47-4	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Hexachloroethane	67-72-1	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Indeno[1,2,3-cd]pyrene	193-39-5	0.5	2.3		0.19	1.6		0.2	1.4		0.12	5.9		1.1	4.6		2.3	0.6		0.4	1.3		0.37	0.6		0.37
Isophorone	78-59-1	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Naphthalene	91-20-3	100	0.54		0.047	0.27		0.05	0.35		0.029	ND		0.27	0.93		0.57	ND		0.099	ND		0.092	0.17		0.092
Nitrobenzene	98-95-3	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
N-Nitrosodimethylamine	62-75-9	NA													ND		2.3									
N-Nitroso-di-n-propylamine	621-64-7	NA	ND		0.047	ND		0.05	ND		0.029	ND		0.27	ND		0.57	ND		0.099	ND		0.092	ND		0.092
N-Nitrosodiphenylamine	86-30-6	NA	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Pentachlorophenol	87-86-5	6.7	ND		0.95	ND		0.99	ND		0.59	ND		5.5	ND		11	ND		2	ND		1.8	ND		1.8
Phenanthrene	85-01-8	100	10		0.19	1.6		0.2	5.5		0.12	12		1.1	22		2.3	0.46		0.4	2.1		0.37	0.57		0.37
Phenol	108-95-2	100	ND		0.19	ND		0.2	ND		0.12	ND		1.1	ND		2.3	ND		0.4	ND		0.37	ND		0.37
Pyrene	129-00-0	100	10		0.19	4		0.2	6.6		0.12	17		1.1	22		2.3	1.1		0.4	3.6		0.37	1.2		0.37
Pyridine	110-86-1	NA													ND		2.3									

NOTES:

Restricted Residential Soil Cleanup Objectives (RRES SCOs) were derived from the NYSDEC 6 N 375, Section 365-6-8, Soil Cleanup Objectives tables, Table 375-6-8(b), effective December 14, 2006.
ND = Not Detected
NA = Not Applicable
mg/Kg = milligram per kilogram
Q = Data Qualifier
J = Indicates the value is estimated because it is either a Tentatively Identified Compound (TIC) or the reported concentration is greater than the MDL but less than the RL.
Result exceeds at least one criterion

Table 2
2017 Remedial Investigation Soil Analytical Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		Part375 Restricted Residential (mg/Kg)	SB-GP-14_09142017			SB-GP-15_09142017			SB-GP-16_09142017			MW-GP-4_09142017			MW-GP-5_09142017			MW-GP-6_09142017			MW-GP-7_09142017			UST-A			UST-B		
LAB ID:			AD00089-001			AD00089-002			AD00089-003			AD00089-004			AD00089-005			AD00089-006			AD00089-007			AD00038-001			AD00038-002		
COLLECTION DATE:			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/14/2017			9/13/2017			9/13/2017		
SAMPLE MATRIX:			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
SAMPLE DEPTH: (ft BGS)			5-6			17-19			3-5			3-5			13-15			14-16			3-5			4.5 (BSS)			3 (BSS)		
SAMPLE UNITS:			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg		
Analyte	**CAS Number**		**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
METALS																													
Mercury	7439-97-6	0.81	0.26		0.1	310		12	4.3		0.095	5.8		0.2	0.2		0.095	160		9.7	1.4		0.097	1.4		0.11	0.89		0.097
Aluminum	7429-90-5	NA	5900		240	14000		280	7400		230	4500		240	27000		230	3100		290	4600		230	16000		260	15000		230
Barium	7440-39-3	400	86		12	68		14	1100		11	65		12	140		11	210		14	43		12	130		13	530		12
Calcium	7440-70-2	NA	5700		1,200	18000		1,400	7600		1,100	13000		1,200	4000		1,100	9500		1,400	9500		1,200	34000		1,300	14000		1,200
Chromium	7440-47-3	180	16		6	38		7	26		5.7	11		6	48		5.7	16		7.2	9.4		5.8	47		6.4	30		5.8
Cobalt	7440-48-4	NA	7.7		3	11		3.5	11		2.8	14		3	20		2.8	27		3.6	5.1		2.9	22		3.2	13		2.9
Copper	7440-50-8	270	38		6	89		7	430		5.7	290		6	50		5.7	1400		7.2	84		5.8	730		6.4	860		5.8
Iron	7439-89-6	NA	47000		240	31000		280	98000		230	37000		240	48000		230	43000		290	25000		230	67000		260	51000		230
Lead	7439-92-1	400	520		6	150		7	3000		5.7	210		6	56		5.7	1300		7.2	120		5.8	520		6.4	1300		5.8
Magnesium	7439-95-4	NA	3400		600	9800		700	3200		570	1500		600	8800		570	1900		720	2900		580	13000		640	6000		580
Manganese	7439-96-5	2,000	350		12	350		14	860		11	470		12	450		11	200		14	230		12	880		13	740		12
Nickel	7440-02-0	310	21		6	26		7	31		5.7	56		6	43		5.7	29		7.2	14		5.8	77		6.4	35		5.8
Potassium	7440-09-7	NA	1300		600	2100		700	750		570	ND		600	3000		570	ND		720	650		580	2200		640	2000		580
Sodium	7440-23-5	NA	ND		300	440		350	440		280	310		300	ND		280	ND		360	380		290	1600		320	1100		290
Vanadium	7440-62-2	NA	21		12	31		14	42		11	27		12	60		11	19		14	18		12	66		13	43		12
Zinc	7440-66-6	10,000	96		12	170		14	850		11	250		12	92		11	4000		14	53		12	350		13	320		12
Antimony	7440-36-0	NA	ND		0.96	ND		1.1	0.95		0.91	ND		0.96	ND		0.91	6		1.2	ND		0.93	ND		1	ND		0.93
Arsenic	7440-38-2	16	2.9		0.24	8.3		0.28	8.9		0.23	13		0.24	2.2		0.23	20		0.29	8.6		0.23	14		0.26	13		0.23
Beryllium	7440-41-7	72	ND		0.24	0.48		0.28	ND		0.23	0.26		0.24	0.35		0.23	ND		0.29	ND		0.23	0.38		0.26	ND		0.7
Cadmium	7440-43-9	4.3	ND		0.48	ND		0.56	1.1		0.45	ND		0.48	ND		0.45	0.63		0.58	ND		0.47	1.1		0.51	1		0.47
Selenium	7782-49-2	180	ND		2.4	ND		2.8	ND		2.3	ND		2.4	ND		2.3	ND		2.9	ND		2.3	ND		2.6	ND		2.3
Silver	7440-22-4	180	ND		0.24	ND		0.28	0.38		0.23	ND		0.24	ND		0.23	1.2		0.29	ND		0.23	ND		0.26	ND		0.23
Thallium	7440-28-0	NA	ND		0.48	ND		0.56	ND		0.45	ND		0.48	ND		0.45	ND		0.58	ND		0.47	ND		0.51	ND		0.47
HERBICIDES																													
2,4,5-T	93-76-5	NA	ND		0.012	ND		0.028	ND		0.011	ND		0.012	ND		0.011	ND		0.029	ND		0.012	ND		0.013	ND		0.012
2,4-D	94-75-7	NA	ND		0.012	ND		0.028	ND		0.011	ND		0.012	ND		0.011	ND		0.029	ND		0.012	ND		0.013	ND		0.012
Dicamba	1918-00-9	NA	ND		0.012	ND		0.028	ND		0.011	ND		0.012	ND		0.011	ND		0.029	ND		0.012	ND		0.013	ND		0.012
Silvex	93-72-1	100	ND		0.012	ND		0.028	ND		0.011	ND		0.012	ND		0.011	ND		0.029	ND		0.012	ND		0.013	ND		0.012
PCBs																													
Aroclor (Total)	1336-36-3	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	0.052		0.029	0.046		0.032	0.047		0.029
Aroclor-1016	12674-11-2	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
Aroclor-1221	11104-28-2	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
Aroclor-1232	11141-16-5	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
Aroclor-1242	53469-21-9	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
Aroclor-1248	12672-29-6	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
Aroclor-1254	11097-69-1	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	0.052		0.029	0.046		0.032	0.047		0.029
Aroclor-1260	11096-82-5	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
Aroclor-1262	37324-23-5	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
Aroclor-1268	11100-14-4	1	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
PESTICIDES																													
a-Chlordane	5103-71-9	4.2	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Aldrin	309-00-2	0.097	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Alpha-BHC	319-84-6	0.48	ND		0.0012	ND		0.0014	ND		0.0011	ND		0.0012	ND		0.0011	ND		0.0014	ND		0.0012	ND		0.0013	ND		0.0012
beta-BHC	319-85-7	0.36	ND		0.0012	ND		0.0014	ND		0.0011	ND		0.0012	ND		0.0011	ND		0.0014	ND		0.0012	ND		0.0013	ND		0.0012
Chlordane (Total)	57-74-9	4.2	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
delta-BHC	319-86-8	100	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Dieldrin	60-57-1	0.2	ND		0.0012	ND		0.0014	ND		0.0011	ND		0.0012	ND		0.0011	ND		0.0014	ND		0.0012	ND		0.0013	ND		0.0012
Endosulfan I	959-98-8	24	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Endosulfan II	33213-65-9	24	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Endosulfan Sulfate	1031-07-8	24	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Endrin	72-20-8	11	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Endrin Aldehyde	7421-93-4	NA	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Endrin Ketone	53494-70-5	NA	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
gamma-BHC	58-89-9	1.3	ND		0.0012	ND		0.0014	ND		0.0011	ND		0.0012	ND		0.0011	ND		0.0014	ND		0.0012	ND		0.0013	ND		0.0012
Heptachlor	76-44-8	2.1	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Heptachlor Epoxide	1024-57-3	NA	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
Methoxychlor	72-43-5	NA	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
p,p'-DDD	72-54-8	13	ND		0.003	ND		0.0035	ND		0.0028	ND		0.003	ND		0.0028	ND		0.0036	ND		0.0029	ND		0.0032	ND		0.0029
p,p'-DDE	72-55-9	8.9	ND		0.003	ND		0.0035	ND		0.0028	ND		0.003	ND		0.0028	ND		0.0036	ND		0.0029	ND		0.0032	ND		0.0029
p,p'-DDT	50-29-3	7.9	ND		0.003	ND		0.0035	ND		0.0028	ND		0.003	ND		0.0028	ND		0.0036	ND		0.0029	ND		0.0032	ND		0.0029
Toxaphene	8001-35-2	NA	ND		0.03	ND		0.035	ND		0.028	ND		0.03	ND		0.028	ND		0.036	ND		0.029	ND		0.032	ND		0.029
γ-Chlordane	5103-74-2	4.2	ND		0.006	ND		0.007	ND		0.0057	ND		0.006	ND		0.0057	ND		0.0072	ND		0.0058	ND		0.0064	ND		0.0058
WET CHEMISTRY																													
% Solids	PERSOL	NA	83(Percent)			71(Percent)			88(Percent)			83(Percent)			88(Percent)			69(Percent)			86(Percent)			78(Percent)			86(Percent)		
Cyanide	57-12-5	27	0.47		0.29	0.5		0.34	0.61		0.27	0.69		0.29	0.69		0.27	5.4		0.35	ND		0.28	ND		0.31	ND		0.28
Eh		NA				160(mV)			350(mV)						260(mV)						260(mV)								
pH	PH	NA				8.2(pH)			7.5(pH)						7.9(pH)						8.0(pH)								
Cr (Hexavalent)	18540-29-9	110				ND		1.4	ND		1.1				ND		1.1				ND		1.2						

NOTES:

Restricted Residential Soil Cleanup Objectives (RRES SCOs) were

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mg/Kg = milligram per kilogram

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2017 Remedial Investigation Soil Analytical Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:			UST-C			UST-D			UST-E			SD-1_09152017			SD-2-09222017			SURF-1_09152017			SURF-2_09152017			SURF-3_09152017		
LAB ID:			AD00038-003			AD00038-004			AD00038-005			AD00089-009			AD00208-001			AD00089-011			AD00089-012			AD00089-013		
COLLECTION DATE:			9/13/2017			9/13/2017			9/13/2017			9/15/2017			9/22/2017			9/15/2017			9/15/2017			9/15/2017		
SAMPLE MATRIX:			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
SAMPLE DEPTH: (ft BGS)			3 (BSS)			3.5 (BSS)			3 (BSS)			0-0.5			0-0.5			0-0.5			0-0.5			0-0.5		
SAMPLE UNITS:		Part375 Restricted Residential (mg/Kg)	mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg		
Analyte	CAS Number		Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
METALS																										
Mercury	7439-97-6	0.81	0.74		0.095	1.6		0.099	0.38		0.098	5.1		0.14	1.9		0.095	0.27		0.099	1.5		0.092	0.26		0.092
Aluminum	7429-90-5	NA	13000		230	13000		240	16000		240	6500		330	9600		230	3800		240	4500		220	3600		220
Barium	7440-39-3	400	92		11	100		12	68		12	430		16	610		11	68		12	200		11	110		11
Calcium	7440-70-2	NA	7800		1,100	18000		1,200	3900		1,200	30000		1,600	62000		1,100	22000		1,200	6600		1,100	19000		1,100
Chromium	7440-47-3	180	26		5.7	27		6	18		5.9	96		8.2	160		5.7	34		6	51		5.5	110		5.5
Cobalt	7440-48-4	NA	10		2.8	13		3	12		2.9	17		4.1	13		2.8	7		3	9.1		2.7	7.4		2.7
Copper	7440-50-8	270	260		5.7	220		6	760		5.9	4600		8.2	1400		5.7	190		6	630		5.5	240		5.5
Iron	7439-89-6	NA	31000		230	43000		240	56000		240	60000		330	48000		230	40000		240	60000		220	49000		220
Lead	7439-92-1	400	200		5.7	480		6	570		5.9	24000		82	6400		11	380		6	2500		5.5	680		5.5
Magnesium	7439-95-4	NA	6400		570	6100		600	4400		590	10000		820	14000		570	10000		600	2700		550	8600		550
Manganese	7439-96-5	2,000	490		11	610		12	480		12	450		160	450		11	270		12	490		11	380		11
Nickel	7440-02-0	310	28		5.7	35		6	38		5.9	58		8.2	50		5.7	18		6	44		5.5	32		5.5
Potassium	7440-09-7	NA	1800		570	1800		600	2200		590	1000		820	1700		570	ND		600	ND		550	570		550
Sodium	7440-23-5	NA	1200		280	2500		300	540		290	790		410	1100		280	ND		300	ND		270	350		270
Vanadium	7440-62-2	NA	40		11	43		12	36		12	130		16	45		11	27		12	27		11	33		11
Zinc	7440-66-6	10,000	120		11	160		12	200		12	4900		16	2500		11	280		12	740		11	440		11
Antimony	7440-36-0	NA	ND		0.91	1.5		0.95	1.2		0.94	1.4		1.3	1.6		0.91	ND		0.95	1		0.88	ND		0.88
Arsenic	7440-38-2	16	7.5		0.23	9.2		0.24	9.8		0.24	20		0.33	29		0.23	6.4		0.24	20		0.22	10		0.22
Beryllium	7440-41-7	72	0.27		0.23	0.35		0.24	0.34		0.24	ND		0.33	0.48		0.23	ND		0.24	0.25		0.22	ND		0.22
Cadmium	7440-43-9	4.3	ND		0.45	ND		0.48	0.48		0.47	12		0.66	34		0.45	8.7		0.48	6.4		0.44	7.9		0.44
Selenium	7782-49-2	180	ND		2.3	3.3		2.4	ND		2.4	ND		3.3	2.9		2.3	ND		2.4	ND		2.2	2.7		2.2
Silver	7440-22-4	180	ND		0.23	0.25		0.24	0.24		0.24	3.8		0.33	3		0.23	ND		0.24	0.59		0.22	ND		0.22
Thallium	7440-28-0	NA	ND		0.45	ND		0.48	ND		0.47	1.2		0.66	1.1		0.45	ND		0.48	ND		0.44	ND		0.44
HERBICIDES																										
2,4,5-T	93-76-5	NA	ND		0.011	ND		0.012	ND		0.012	ND		0.033	ND		0.11	ND		0.012	ND		0.011	ND		0.011
2,4-D	94-75-7	NA	ND		0.011	ND		0.012	ND		0.012	ND		0.033	ND		0.11	ND		0.012	ND		0.011	ND		0.011
Dicamba	1918-00-9	NA	ND		0.011	ND		0.012	ND		0.012	ND		0.033	ND		0.11	ND		0.012	ND		0.011	ND		0.011
Silvex	93-72-1	100	ND		0.011	ND		0.012	ND		0.012	ND		0.033	ND		0.11	ND		0.012	ND		0.011	ND		0.011
PCBs																										
Aroclor (Total)	1336-36-3	1	ND		0.028	ND		0.03	ND		0.029	4.2		0.2	98		2.8	0.13		0.03	0.19		0.027	0.39		0.027
Aroclor-1016	12674-11-2	1	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		2.8	ND		0.03	ND		0.027	ND		0.027
Aroclor-1221	11104-28-2	1	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		2.8	ND		0.03	ND		0.027	ND		0.027
Aroclor-1232	11141-16-5	1	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		2.8	ND		0.03	ND		0.027	ND		0.027
Aroclor-1242	53469-21-9	1	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		2.8	ND		0.03	ND		0.027	ND		0.027
Aroclor-1248	12672-29-6	1	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		2.8	ND		0.03	ND		0.027	ND		0.027
Aroclor-1254	11097-69-1	1	ND		0.028	ND		0.03	ND		0.029	4.2		0.2	98		2.8	ND		0.03	ND		0.027	0.39		0.027
Aroclor-1260	11096-82-5	1	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		2.8	0.13		0.03	0.19		0.027	ND		0.027
Aroclor-1262	37324-23-5	1	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		2.8	ND		0.03	ND		0.027	ND		0.027
Aroclor-1268	11100-14-4	1	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		2.8	ND		0.03	ND		0.027	ND		0.027
PESTICIDES																										
a-Chlordane	5103-71-9	4.2	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Aldrin	309-00-2	0.097	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Alpha-BHC	319-84-6	0.48	ND		0.0011	ND		0.0012	ND		0.0012	ND		0.0082	ND		0.011	ND		0.0024	ND		0.0011	ND		0.0011
beta-BHC	319-85-7	0.36	ND		0.0011	ND		0.0012	ND		0.0012	ND		0.0082	ND		0.011	ND		0.0024	ND		0.0011	ND		0.0011
Chlordane (Total)	57-74-9	4.2	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
delta-BHC	319-86-8	100	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Dieldrin	60-57-1	0.2	ND		0.0011	ND		0.0012	ND		0.0012	ND		0.0082	ND		0.011	ND		0.0024	ND		0.0011	ND		0.0011
Endosulfan I	959-98-8	24	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Endosulfan II	33213-65-9	24	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Endosulfan Sulfate	1031-07-8	24	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Endrin	72-20-8	11	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Endrin Aldehyde	7421-93-4	NA	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Endrin Ketone	53494-70-5	NA	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
gamma-BHC	58-89-9	1.3	ND		0.0011	ND		0.0012	ND		0.0012	ND		0.0082	ND		0.011	ND		0.0024	ND		0.0011	ND		0.0011
Heptachlor	76-44-8	2.1	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Heptachlor Epoxide	1024-57-3	NA	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
Methoxychlor	72-43-5	NA	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
p,p'-DDD	72-54-8	13	ND		0.0028	ND		0.003	ND		0.0029	ND		0.02	ND		0.028	ND		0.006	ND		0.0027	ND		0.0027
p,p'-DDE	72-55-9	8.9	ND		0.0028	ND		0.003	ND		0.0029	ND		0.02	ND		0.028	ND		0.006	ND		0.0027	ND		0.0027
p,p'-DDT	50-29-3	7.9	ND		0.0028	ND		0.003	ND		0.0029	ND		0.02	ND		0.028	ND		0.006	ND		0.0027	ND		0.0027
Toxaphene	8001-35-2	NA	ND		0.028	ND		0.03	ND		0.029	ND		0.2	ND		0.28	ND		0.06	ND		0.027	ND		0.027
γ-Chlordane	5103-74-2	4.2	ND		0.0057	ND		0.006	ND		0.0059	ND		0.041	ND		0.057	ND		0.012	ND		0.0055	ND		0.0055
WET CHEMISTRY																										
% Solids	PERSOL	NA	88(Percent)			84(Percent)			85(Percent)			61(Percent)			88(Percent)			84(Percent)			91(Percent)			91(Percent)		
Cyanide	57-12-5	27	ND		0.27	ND		0.29	ND		0.28	0.91		0.39	0.3		0.27	ND		0.29	ND		0.26	7.4		1.1
Eh		NA										310(mV)			260(MV)			330(mV)			330(mV)			350(mV)		
pH	PH	NA										7.2(pH)			7.0(PH)			8.0(pH)			7.3(pH)			7.3(pH)		
Cr (Hexavalent)	18540-29-9	110										ND		1.6	ND		1.1	ND		1.2	ND		1.1	ND		1.1

NOTES:

Restricted Residential Soil Cleanup Objectives (RRES SCOs) were

ND = Not Detected

NA = Not Applicable

mg/Kg = milligram per kilogram

Q = Data Qualifier

J = Indicates the value is estimated because it is either a Tentatively Identified Compound (TIC) or the reported concentration is greater than the MDL but less than the RL.

Result exceeds at least one criterion

Table 3
2017 Remedial Investigation Groundwater Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		NY TOGS WaterQualStds ug/L	MW-GP-4_09142017			MW-GP-5_09142017			MW-GP-6_09142017			MW-GP-7_09142017		
LAB ID:			AD00089-014			AD00089-015			AD00089-016			AD00089-017		
COLLECTION DATE:			9/15/2017			9/15/2017			9/15/2017			9/15/2017		
SAMPLE MATRIX:			Aqueous			Aqueous			Aqueous			Aqueous		
SAMPLE DEPTH: (ft BGS)			8			8			8			8		
SAMPLE UNITS:			ug/L			ug/L			ug/L			ug/L		
Analyte	**CAS Number**		**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
VOLATILES														
:TotalVolatileTic	TOTVOLTIC	NA	ND		NA	ND		NA	ND		NA	ND		NA
1,1,1-Trichloroethane	71-55-6	5	ND		1	ND		1	2.9		1	ND		1
1,1,2,2-Tetrachloroethane	79-34-5	5	ND		1	ND		1	ND		1	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	ND		1	ND		1	ND		1	ND		1
1,1,2-Trichloroethane	79-00-5	1	ND		1	ND		1	ND		1	ND		1
1,1-Dichloroethane	75-34-3	5	ND		1	1.3		1	1.7		1	ND		1
1,1-Dichloroethene	75-35-4	5	ND		1	ND		1	ND		1	ND		1
1,2,3-Trichlorobenzene	87-61-6	NA	ND		1	ND		1	ND		1	ND		1
1,2,4-Trichlorobenzene	120-82-1	5	ND		1	ND		1	ND		1	ND		1
1,2-Dibromo-3-chloropropane	96-12-8	0.04	ND		1	ND		1	ND		1	ND		1
1,2-Dibromoethane	106-93-4	0.0006	ND		1	ND		1	ND		1	ND		1
1,2-Dichlorobenzene	95-50-1	3	ND		1	ND		1	ND		1	ND		1
1,2-Dichloroethane	107-06-2	0.6	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,2-Dichloropropane	78-87-5	1	ND		1	ND		1	ND		1	ND		1
1,3-Dichlorobenzene	541-73-1	3	ND		1	ND		1	ND		1	ND		1
1,4-Dichlorobenzene	106-46-7	3	ND		1	ND		1	ND		1	ND		1
1,4-Dioxane	123-91-1	NA	ND		50	ND		50	ND		50	ND		50
2-Butanone	78-93-3	50	ND		1	ND		1	ND		1	ND		1
2-Hexanone	591-78-6	50	ND		1	ND		1	ND		1	ND		1
4-Methyl-2-pentanone	108-10-1	NA	ND		1	ND		1	ND		1	ND		1
Acetone	67-64-1	50	ND		5	ND		5	ND		5	ND		5
Benzene	71-43-2	1	ND		0.5	ND		0.5	ND		0.5	ND		0.5
Bromochloromethane	74-97-5	5	ND		1	ND		1	ND		1	ND		1
Bromodichloromethane	75-27-4	50	ND		1	ND		1	ND		1	ND		1
Bromoform	75-25-2	50	ND		1	ND		1	ND		1	ND		1
Bromomethane	74-83-9	5	ND		1	ND		1	ND		1	ND		1
Carbon disulfide	75-15-0	NA	ND		1	ND		1	ND		1	ND		1
Carbon tetrachloride	56-23-5	5	ND		1	ND		1	ND		1	ND		1
Chlorobenzene	108-90-7	5	ND		1	ND		1	ND		1	ND		1
Chloroethane	75-00-3	5	ND		1	ND		1	ND		1	ND		1
Chloroform	67-66-3	7	33		1	ND		1	1.8		1	ND		1
Chloromethane	74-87-3	5	ND		1	ND		1	ND		1	ND		1
cis-1,2-Dichloroethene	156-59-2	5	ND		1	ND		1	ND		1	ND		1
cis-1,3-Dichloropropene	10061-01-5	0.4	ND		1	ND		1	ND		1	ND		1
Cyclohexane	110-82-7	NA	ND		1	ND		1	ND		1	ND		1
Dibromochloromethane	124-48-1	50	ND		1	ND		1	ND		1	ND		1
Dichlorodifluoromethane	75-71-8	5	ND		1	ND		1	ND		1	ND		1
Ethylbenzene	100-41-4	5	ND		1	ND		1	ND		1	ND		1
Isopropylbenzene	98-82-8	5	ND		1	ND		1	ND		1	ND		1
m&p-Xylenes	179601-23-1	5	ND		1	ND		1	ND		1	ND		1
Methyl Acetate	79-20-9	NA	ND		1	ND		1	ND		1	ND		1
Methylcyclohexane	108-87-2	NA	ND		1	ND		1	ND		1	ND		1
Methylene chloride	75-09-2	5	ND		1	ND		1	ND		1	ND		1
Methyl-t-butyl ether	1634-04-4	NA	ND		0.5	ND		0.5	ND		0.5	ND		0.5
o-Xylene	95-47-6	5	ND		1	ND		1	ND		1	ND		1
Styrene	100-42-5	5	ND		1	ND		1	ND		1	ND		1
Tetrachloroethene	127-18-4	5	ND		1	ND		1	3.4		1	ND		1
Toluene	108-88-3	5	ND		1	ND		1	ND		1	ND		1
trans-1,2-Dichloroethene	156-60-5	5	ND		1	ND		1	ND		1	ND		1
trans-1,3-Dichloropropene	10061-02-6	0.4	ND		1	ND		1	ND		1	ND		1
Trichloroethene	79-01-6	5	ND		1	ND		1	ND		1	ND		1
Trichlorofluoromethane	75-69-4	5	ND		1	ND		1	ND		1	ND		1
Vinyl chloride	75-01-4	2	ND		1	ND		1	ND		1	ND		1
Xylenes (Total)	1330-20-7	NA	ND		1	ND		1	ND		1	ND		1

NOTES:

TOGS GA: Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations; June 1998.

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NA = Not Applicable

ug/L = microgram per Liter

Q = Data Qualifier

J = Indicates the value is estimated because it is either a Tentatively Identified Compound (TIC) or the reported concentration is greater than the MDL but less than the RL.

Result exceeds NY TOGS Water Quality Standards

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SAMPLE DEPTH: (ft BGS)			8			8			8			8		
SAMPLE UNITS:			ug/L			ug/L			ug/L			ug/L		
Analyte	**CAS Number**		**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
SEMIVOLATILES														
:TotalSemiVolatileTic	TOTSEMTIC	NA	ND		NA	4.3	J	NA	ND		NA	ND		NA
1,1'-Biphenyl	92-52-4	5	ND		2	ND		2	ND		2.1	ND		2.1
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ND		2	ND		2	ND		2.1	ND		2.1
2,3,4,6-Tetrachlorophenol	58-90-2	NA	ND		2	ND		2	ND		2.1	ND		2.1
2,4,5-Trichlorophenol	95-95-4	NA	ND		2	ND		2	ND		2.1	ND		2.1
2,4,6-Trichlorophenol	88-06-2	NA	ND		2	ND		2	ND		2.1	ND		2.1
2,4-Dichlorophenol	120-83-2	5	ND		0.5	ND		0.5	ND		0.53	ND		0.53
2,4-Dimethylphenol	105-67-9	50	ND		0.5	ND		0.5	ND		0.53	ND		0.53
2,4-Dinitrophenol	51-28-5	10	ND		10	ND		10	ND		11	ND		11
2,4-Dinitrotoluene	121-14-2	5	ND		2	ND		2	ND		2.1	ND		2.1
2,6-Dinitrotoluene	606-20-2	5	ND		2	ND		2	ND		2.1	ND		2.1
2-Chloronaphthalene	91-58-7	10	ND		2	ND		2	ND		2.1	ND		2.1
2-Chlorophenol	95-57-8	NA	ND		2	ND		2	ND		2.1	ND		2.1
2-Methylnaphthalene	91-57-6	NA	ND		2	ND		2	ND		2.1	ND		2.1
2-Methylphenol	95-48-7	NA	ND		0.5	ND		0.5	ND		0.53	ND		0.53
2-Nitroaniline	88-74-4	5	ND		2	ND		2	ND		2.1	ND		2.1
2-Nitrophenol	88-75-5	NA	ND		2	ND		2	ND		2.1	ND		2.1
3&4-Methylphenol	106-44-5	NA	ND		0.5	ND		0.5	ND		0.53	ND		0.53
3,3'-Dichlorobenzidine	91-94-1	5	ND		2	ND		2	ND		2.1	ND		2.1
3-Nitroaniline	99-09-2	5	ND		2	ND		2	ND		2.1	ND		2.1
4,6-Dinitro-2-methylphenol	534-52-1	1	ND		10	ND		10	ND		11	ND		11
4-Bromophenyl-phenylether	101-55-3	NA	ND		2	ND		2	ND		2.1	ND		2.1
4-Chloro-3-methylphenol	59-50-7	1	ND		2	ND		2	ND		2.1	ND		2.1
4-Chloroaniline	106-47-8	5	ND		0.5	ND		0.5	ND		0.53	ND		0.53
4-Chlorophenyl-phenylether	7005-72-3	NA	ND		2	ND		2	ND		2.1	ND		2.1
4-Nitroaniline	100-01-6	5	ND		2	ND		2	ND		2.1	ND		2.1
4-Nitrophenol	100-02-7	NA	ND		2	ND		2	ND		2.1	ND		2.1
Acenaphthene	83-32-9	20	ND		2	ND		2	ND		2.1	ND		2.1
Acenaphthylene	208-96-8	NA	ND		2	ND		2	ND		2.1	ND		2.1
Acetophenone	98-86-2	NA	ND		2	ND		2	ND		2.1	ND		2.1
Anthracene	120-12-7	50	ND		2	ND		2	ND		2.1	ND		2.1
Atrazine	1912-24-9	7.5	ND		2	ND		2	ND		2.1	ND		2.1
Benzaldehyde	100-52-7	NA	ND		2	ND		2	ND		2.1	ND		2.1
Benzo[a]anthracene	56-55-3	0.002	ND		2	ND		2	ND		2.1	ND		2.1
Benzo[a]pyrene	50-32-8	ND	ND		2	ND		2	ND		2.1	ND		2.1
Benzo[b]fluoranthene	205-99-2	0.002	ND		2	ND		2	ND		2.1	ND		2.1
Benzo[g,h,i]perylene	191-24-2	NA	ND		2	ND		2	ND		2.1	ND		2.1
Benzo[k]fluoranthene	207-08-9	0.002	ND		2	ND		2	ND		2.1	ND		2.1
bis(2-Chloroethoxy)methane	111-91-1	5	ND		2	ND		2	ND		2.1	ND		2.1
bis(2-Chloroethyl)ether	111-44-4	1	ND		0.5	ND		0.5	ND		0.53	ND		0.53
bis(2-Chloroisopropyl)ether	108-60-1	5	ND		2	ND		2	ND		2.1	ND		2.1
bis(2-Ethylhexyl)phthalate	117-81-7	5	ND		2	ND		2	ND		2.1	ND		2.1
Butylbenzylphthalate	85-68-7	50	ND		2	ND		2	ND		2.1	ND		2.1
Caprolactam	105-60-2	NA	ND		2	ND		2	ND		2.1	ND		2.1
Carbazole	86-74-8	NA	ND		2	ND		2	ND		2.1	ND		2.1
Chrysene	218-01-9	0.002	ND		2	ND		2	ND		2.1	ND		2.1
Dibenzo[a,h]anthracene	53-70-3	NA	ND		2	ND		2	ND		2.1	ND		2.1
Dibenzofuran	132-64-9	NA	ND		0.5	ND		0.5	ND		0.53	ND		0.53
Diethylphthalate	84-66-2	50	ND		2	ND		2	ND		2.1	ND		2.1
Dimethylphthalate	131-11-3	50	ND		2	ND		2	ND		2.1	ND		2.1
Di-n-butylphthalate	84-74-2	50	ND		0.5	ND		0.5	ND		0.53	ND		0.53
Di-n-octylphthalate	117-84-0	50	ND		2	ND		2	ND		2.1	ND		2.1
Fluoranthene	206-44-0	50	ND		2	ND		2	ND		2.1	ND		2.1
Fluorene	86-73-7	50	ND		2	ND		2	ND		2.1	ND		2.1
Hexachlorobenzene	118-74-1	0.04	ND		2	ND		2	ND		2.1	ND		2.1
Hexachlorobutadiene	87-68-3	0.5	ND		2	ND		2	ND		2.1	ND		2.1
Hexachlorocyclopentadiene	77-47-4	5	ND		2	ND		2	ND		2.1	ND		2.1
Hexachloroethane	67-72-1	5	ND		2	ND		2	ND		2.1	ND		2.1
Indeno[1,2,3-cd]pyrene	193-39-5	0.002	ND		2	ND		2	ND		2.1	ND		2.1
Isophorone	78-59-1	50	ND		2	ND		2	ND		2.1	ND		2.1
Naphthalene	91-20-3	10	ND		0.5	ND		0.5	ND		0.53	ND		0.53
Nitrobenzene	98-95-3	0.4	ND		2	ND		2	ND		2.1	ND		2.1
N-Nitroso-di-n-propylamine	621-64-7	NA	ND		0.5	ND		0.5	ND		0.53	ND		0.53
N-Nitrosodiphenylamine	86-30-6	NA	ND		2	ND		2	ND		2.1	ND		2.1
Pentachlorophenol	87-86-5	1	ND		10	ND		10	ND		11	ND		11
Phenanthrene	85-01-8	50	ND		2	ND		2	ND		2.1	ND		2.1
Phenol	108-95-2	1	ND		2	ND		2	ND		2.1	ND		2.1
Pyrene	129-00-0	50	ND		2	ND		2	ND		2.1	ND		2.1

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Q = Data Qualifier

Result exceeds NY TOGS Water Quality Standards

Table 3
2017 Remedial Investigation Groundwater Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		NY TOGS WaterQualStds ug/L	MW-GP-4_09142017			MW-GP-5_09142017			MW-GP-6_09142017			MW-GP-7_09142017		
LAB ID:			AD00089-014			AD00089-015			AD00089-016			AD00089-017		
COLLECTION DATE:			9/15/2017			9/15/2017			9/15/2017			9/15/2017		
SAMPLE MATRIX:			Aqueous			Aqueous			Aqueous			Aqueous		
SAMPLE DEPTH: (ft BGS)			8			8			8			8		
SAMPLE UNITS:			ug/L			ug/L			ug/L			ug/L		
Analyte	**CAS Number**		**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
METALS														
Mercury	7439-97-6	0.7	ND		0.5	ND		0.5	ND		0.5	ND		0.5
Aluminum	7429-90-5	NA	330		200	350		200	340		200	2000		200
Barium	7440-39-3	1,000	ND		50	ND		50	ND		50	73		50
Calcium	7440-70-2	NA	10000		5,000	12000		5,000	13000		5,000	15000		5,000
Chromium	7440-47-3	50	ND		50	ND		50	ND		50	ND		50
Copper	7440-50-8	200	ND		50	ND		50	ND		50	ND		50
Iron	7439-89-6	300	350		300	2000		300	5300		300	3600		300
Magnesium	7439-95-4	35,000	ND		5,000	ND		5,000	ND		5,000	ND		5,000
Manganese	7439-96-5	300	ND		40	130		40	930		40	120		40
Nickel	7440-02-0	100	ND		50	ND		50	ND		50	ND		50
Potassium	7440-09-7	NA	ND		5,000	ND		5,000	ND		5,000	ND		5,000
Silver	7440-22-4	50	ND		20	ND		20	ND		20	ND		20
Sodium	7440-23-5	20,000	11000		5,000	11000		5,000	11000		5,000	12000		5,000
Vanadium	7440-62-2	NA	ND		50	ND		50	ND		50	ND		50
Zinc	7440-66-6	2,000	ND		50	67		50	69		50	ND		50
Antimony	7440-36-0	3	ND		3	ND		3	ND		3	ND		3
Arsenic	7440-38-2	25	ND		2	ND		2	ND		2	3.7		2
Beryllium	7440-41-7	3	ND		1	ND		1	ND		1	ND		1
Cadmium	7440-43-9	5	ND		2	ND		2	ND		2	ND		2
Cobalt	7440-48-4	NA	ND		2	ND		2	4.3		2	ND		2
Lead	7439-92-1	25	5.8		3	20		3	17		3	24		3
Selenium	7782-49-2	10	ND		10	ND		10	ND		10	ND		10
Thallium	7440-28-0	0.5	ND		2	ND		2	ND		2	ND		2

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Result exceeds NY TOGS Water Quality Standards

Table 3
2017 Remedial Investigation Groundwater Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		NY TOGS WaterQualStds ug/L	MW-GP-4_09142017			MW-GP-5_09142017			MW-GP-6_09142017			MW-GP-7_09142017		
LAB ID:			AD00089-014			AD00089-015			AD00089-016			AD00089-017		
COLLECTION DATE:			9/15/2017			9/15/2017			9/15/2017			9/15/2017		
SAMPLE MATRIX:			Aqueous			Aqueous			Aqueous			Aqueous		
SAMPLE DEPTH: (ft BGS)			8			8			8			8		
SAMPLE UNITS:			ug/L			ug/L			ug/L			ug/L		
Analyte	**CAS Number**		**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
HERBICIDES														
2,4,5-T	93-76-5	35	ND		0.5	ND		0.56	ND		0.56	ND		0.56
2,4-D	94-75-7	50	ND		0.5	ND		0.56	ND		0.56	ND		0.56
Dicamba	1918-00-9	0.44	ND		0.5	ND		0.56	ND		0.56	ND		0.56
Silvex	93-72-1	0.26	ND		0.5	ND		0.56	ND		0.56	ND		0.56
PCBs														
Aroclor (Total)	1336-36-3	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1016	12674-11-2	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1221	11104-28-2	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1232	11141-16-5	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1242	53469-21-9	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1248	12672-29-6	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1254	11097-69-1	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1260	11096-82-5	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1262	37324-23-5	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
Aroclor-1268	11100-14-4	0.09	ND		0.25	ND		0.27	ND		0.27	ND		0.27
PESTICIDES														
a-Chlordane	5103-71-9	0.05	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Aldrin	309-00-2	ND	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Alpha-BHC	319-84-6	0.01	ND		0.01	ND		0.011	ND		0.011	ND		0.011
beta-BHC	319-85-7	0.04	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Chlordane (Total)	57-74-9	0.05	ND		0.01	ND		0.011	ND		0.011	ND		0.011
delta-BHC	319-86-8	0.04	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Dieldrin	60-57-1	0.001	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Endosulfan I	959-98-8	NA	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Endosulfan II	33213-65-9	NA	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Endosulfan Sulfate	1031-07-8	NA	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Endrin	72-20-8	ND	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Endrin Aldehyde	7421-93-4	5	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Endrin Ketone	53494-70-5	5	ND		0.01	ND		0.011	ND		0.011	ND		0.011
gamma-BHC	58-89-9	0.05	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Heptachlor	76-44-8	0.04	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Heptachlor Epoxide	1024-57-3	0.03	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Methoxychlor	72-43-5	35	ND		0.01	ND		0.011	ND		0.011	ND		0.011
p,p'-DDD	72-54-8	0.3	ND		0.01	ND		0.011	ND		0.011	ND		0.011
p,p'-DDE	72-55-9	0.2	ND		0.01	ND		0.011	ND		0.011	ND		0.011
p,p'-DDT	50-29-3	0.2	ND		0.01	ND		0.011	ND		0.011	ND		0.011
Toxaphene	8001-35-2	0.06	ND		0.25	ND		0.27	ND		0.27	ND		0.27
y-Chlordane	5103-74-2	0.05	ND		0.01	ND		0.011	ND		0.011	ND		0.011
WET CHEMISTRY														
Cyanide	57-12-5	200	ND		20	ND		20	ND		20	ND		20
Cr (Hexavalent)	18540-29-9	50	ND		25	ND		25	ND		25	ND		25

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Result exceeds NY TOGS Water Quality Standards

Table 4
2017 Remedial Investigation Soil Vapor Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		IA-3			SS-3			SV-GP-3			IA-4			SS-4		
LAB ID:		L1733562-01			L1733562-02			L1733562-03			L1733562-04			L1733562-05		
COLLECTION DATE:		9/19/2017			9/18/2017			9/18/2017			9/19/2017			9/18/2017		
SAMPLE MATRIX:		AIR			AIR			AIR			AIR			AIR		
SAMPLE UNITS:		ug/m3			ug/m3			ug/m3			ug/m3			ug/m3		
Analyte	**CAS Number**	**Conc**	**Q**	**RL**	**Conc**	**Q**	**RL**	**Conc**	**Q**	**RL**	**Conc**	**Q**	**RL**	**Conc**	**Q**	**RL**
VOLATILE ORGANICS IN AIR																
Dichlorodifluoromethane	75-71-8	2.04		0.989	1.87		0.989	ND		4.94	2.26		0.989	ND		29.8
Chloromethane	74-87-3	1.13		0.413	ND		0.413	ND		2.07	0.985		0.413	ND		12.4
Freon-114	76-14-2	ND		1.4	ND		1.4	ND		6.99	ND		1.4	ND		42.1
Vinyl chloride	75-01-4	-		-	ND		0.511	ND		2.56	-		-	ND		15.4
1,3-Butadiene	106-99-0	ND		0.442	ND		0.442	ND		2.21	ND		0.442	ND		13.3
Bromomethane	74-83-9	ND		0.777	ND		0.777	ND		3.88	ND		0.777	ND		23.4
Chloroethane	75-00-3	ND		0.528	ND		0.528	ND		2.64	ND		0.528	ND		15.9
Ethanol	64-17-5	ND		9.42	184		9.42	ND		47.1	ND		9.42	315		285
Vinyl bromide	593-60-2	ND		0.874	ND		0.874	ND		4.37	ND		0.874	ND		26.3
Acetone	67-64-1	11.2		2.38	304		2.38	ND		11.9	12.8		2.38	504		71.5
Trichlorofluoromethane	75-69-4	1.76		1.12	2.38		1.12	ND		5.62	1.52		1.12	ND		33.8
Isopropanol	67-63-0	ND		1.23	13.7		1.23	ND		6.15	ND		1.23	53.1		37.1
1,1-Dichloroethene	75-35-4	-		-	ND		0.793	ND		3.96	-		-	ND		23.9
Tertiary butyl Alcohol	75-65-0	ND		1.52	9.76		1.52	ND		7.58	ND		1.52	ND		45.8
Methylene chloride	75-09-2	ND		1.74	ND		1.74	ND		8.69	ND		1.74	ND		52.5
3-Chloropropene	107-05-1	ND		0.626	ND		0.626	ND		3.13	ND		0.626	ND		18.8
Carbon disulfide	75-15-0	ND		0.623	3.77		0.623	24.3		3.11	ND		0.623	ND		18.7
Freon-113	76-13-1	ND		1.53	ND		1.53	ND		7.66	ND		1.53	ND		46.1
trans-1,2-Dichloroethene	156-60-5	ND		0.793	ND		0.793	ND		3.96	ND		0.793	ND		23.9
1,1-Dichloroethane	75-34-3	ND		0.809	ND		0.809	ND		4.05	ND		0.809	37.2		24.4
Methyl tert butyl ether	1634-04-4	ND		0.721	ND		0.721	ND		3.61	ND		0.721	ND		21.7
2-Butanone	78-93-3	ND		1.47	12.7		1.47	17.4		7.37	ND		1.47	ND		44.5
cis-1,2-Dichloroethene	156-59-2	-		-	ND		0.793	ND		3.96	-		-	ND		23.9
Ethyl Acetate	141-78-6	ND		1.8	ND		1.8	ND		9.01	ND		1.8	ND		54.4
Chloroform	67-66-3	ND		0.977	1.06		0.977	ND		4.88	ND		0.977	85		29.4
Tetrahydrofuran	109-99-9	ND		1.47	ND		1.47	ND		7.37	ND		1.47	ND		44.5
1,2-Dichloroethane	107-06-2	ND		0.809	ND		0.809	ND		4.05	ND		0.809	ND		24.4
n-Hexane	110-54-3	ND		0.705	1.34		0.705	1230		3.52	ND		0.705	ND		21.2
1,1,1-Trichloroethane	71-55-6	-		-	20.6		1.09	32		5.46	-		-	10400		32.8
Benzene	71-43-2	ND		0.639	2.69		0.639	7.92		3.19	ND		0.639	ND		19.2
Carbon tetrachloride	56-23-5	-		-	ND		1.26	ND		6.29	-		-	ND		37.9
Cyclohexane	110-82-7	ND		0.688	2.11		0.688	15.8		3.44	ND		0.688	ND		20.7
1,2-Dichloropropane	78-87-5	ND		0.924	ND		0.924	ND		4.62	ND		0.924	ND		27.8
Bromodichloromethane	75-27-4	ND		1.34	ND		1.34	ND		6.7	ND		1.34	ND		40.3
1,4-Dioxane	123-91-1	ND		0.721	ND		0.721	ND		3.6	ND		0.721	ND		21.7
Trichloroethene	79-01-6	-		-	ND		1.07	ND		5.37	-		-	ND		32.4
2,2,4-Trimethylpentane	540-84-1	ND		0.934	ND		0.934	ND		4.67	ND		0.934	ND		28.1
Heptane	142-82-5	ND		0.82	1.37		0.82	795		4.1	ND		0.82	ND		24.7
cis-1,3-Dichloropropene	10061-01-5	ND		0.908	ND		0.908	ND		4.54	ND		0.908	ND		27.3
4-Methyl-2-pentanone	108-10-1	ND		2.05	ND		2.05	ND		10.2	ND		2.05	ND		61.9
trans-1,3-Dichloropropene	10061-02-6	ND		0.908	ND		0.908	ND		4.54	ND		0.908	ND		27.3
1,1,2-Trichloroethane	79-00-5	ND		1.09	ND		1.09	ND		5.46	ND		1.09	ND		32.8
Toluene	108-88-3	2.18		0.754	18.7		0.754	17.9		3.77	1.14		0.754	ND		22.7
2-Hexanone	591-78-6	ND		0.82	ND		0.82	ND		4.1	ND		0.82	ND		24.7
Dibromochloromethane	124-48-1	ND		1.7	ND		1.7	ND		8.52	ND		1.7	ND		51.3
1,2-Dibromoethane	106-93-4	ND		1.54	ND		1.54	ND		7.69	ND		1.54	ND		46.3
Tetrachloroethene	127-18-4	-		-	321		1.36	348		6.78	-		-	ND		40.8
Chlorobenzene	108-90-7	ND		0.921	ND		0.921	ND		4.61	ND		0.921	ND		27.7
Ethylbenzene	100-41-4	ND		0.869	ND		0.869	ND		4.34	ND		0.869	ND		26.1
p/m-Xylene	179601-23-1	ND		1.74	2.84		1.74	10.9		8.69	ND		1.74	ND		52.1
Bromoform	75-25-2	ND		2.07	ND		2.07	ND		10.3	ND		2.07	ND		62.2
Styrene	100-42-5	ND		0.852	ND		0.852	ND		4.26	ND		0.852	ND		25.6
1,1,2,2-Tetrachloroethane	79-34-5	ND		1.37	ND		1.37	ND		6.87	ND		1.37	ND		41.3
o-Xylene	95-47-6	ND		0.869	2.15		0.869	7.47		4.34	ND		0.869	ND		26.1
4-Ethyltoluene	622-96-8	ND		0.983	ND		0.983	ND		4.92	ND		0.983	ND		29.6
1,3,5-Trimethylbenzene	108-67-8	ND		0.983	ND		0.983	ND		4.92	ND		0.983	ND		29.6
1,2,4-Trimethylbenzene	95-63-6	ND		0.983	1.64		0.983	ND		4.92	ND		0.983	ND		29.6
Benzyl chloride	100-44-7	ND		1.04	ND		1.04	ND		5.18	ND		1.04	ND		31.2
1,3-Dichlorobenzene	541-73-1	ND		1.2	ND		1.2	ND		6.01	ND		1.2	ND		36.2
1,4-Dichlorobenzene	106-46-7	ND		1.2	ND		1.2	ND		6.01	ND		1.2	ND		36.2
1,2-Dichlorobenzene	95-50-1	ND		1.2	ND		1.2	ND		6.01	ND		1.2	ND		36.2
1,2,4-Trichlorobenzene	120-82-1	ND		1.48	ND		1.48	ND		7.42	ND		1.48	ND		44.7
Hexachlorobutadiene	87-68-3	ND		2.13	ND		2.13	ND		10.7	ND		2.13	ND		64.2
VOLATILE ORGANICS IN AIR BY SIM																
Vinyl chloride	75-01-4	ND		0.051	-		-	-		-	ND		0.051	-		-
1,1-Dichloroethene	75-35-4	ND		0.079	-		-	-		-	ND		0.079	-		-
cis-1,2-Dichloroethene	156-59-2	ND		0.079	-		-	-		-	ND		0.079	-		-
1,1,1-Trichloroethane	71-55-6	0.36		0.109	-		-	-		-	0.535		0.109	-		-
Carbon tetrachloride	56-23-5	0.61		0.126	-		-	-		-	0.585		0.126	-		-
Trichloroethene	79-01-6	ND		0.107	-		-	-		-	ND		0.107	-		-
Tetrachloroethene	127-18-4	0.38		0.136	-		-	-		-	0.346		0.136	-		-

NOTES:

ND = Not Detected

NA = Not Applicable

ug/m3 = microgram per cubic meter

Q = Data Qualifier

Table 4
2017 Remedial Investigation Soil Vapor Results
72 Alexander Street, Yonkers, New York

SAMPLE ID:		SV-GP-4			IA-5			SS-5			SV-GP-5			AA-1		
LAB ID:		L1733562-06			L1733562-07			L1733562-08			L1733562-09			L1733562-11		
COLLECTION DATE:		9/18/2017			9/19/2017						9/18/2017			9/19/2017		
SAMPLE MATRIX:		AIR			AIR			AIR			AIR			AIR		
SAMPLE UNITS:		ug/m3			ug/m3			ug/m3			ug/m3			ug/m3		
Analyte	**CAS Number**	**Conc**	**Q**	**RL**	**Conc**	**Q**	**RL**	**Conc**	**Q**	**RL**	**Conc**	**Q**	**RL**	**Conc**	**Q**	**RL**
VOLATILE ORGANICS IN AIR																
Dichlorodifluoromethane	75-71-8	ND		9.89	ND		1.53	ND		153	ND		154	2.3		0.989
Chloromethane	74-87-3	23.1		4.13	ND		0.793	ND		63.8	ND		64.2	1.09		0.413
Freon-114	76-14-2	ND		14	ND		0.809	ND		216	ND		217	ND		1.4
Vinyl chloride	75-01-4	ND		5.11	ND		0.721	ND		79	ND		79.5	-	-	-
1,3-Butadiene	106-99-0	ND		4.42	ND		1.47	ND		68.4	ND		68.8	ND		0.442
Bromomethane	74-83-9	ND		7.77	-		-	ND		120	ND		121	ND		0.777
Chloroethane	75-00-3	33.5		5.28	ND		1.8	ND		81.5	ND		82.1	ND		0.528
Ethanol	64-17-5	ND		94.2	ND		0.977	ND		1450	ND		1460	ND		9.42
Vinyl bromide	593-60-2	ND		8.74	ND		1.47	ND		135	ND		136	ND		0.874
Acetone	67-64-1	ND		23.8	ND		0.809	ND		366	ND		368	7.46		2.38
Trichlorofluoromethane	75-69-4	ND		11.2	ND		0.705	ND		174	ND		175	1.79		1.12
Isopropanol	67-63-0	ND		12.3	-		-	ND		190	ND		191	ND		1.23
1,1-Dichloroethene	75-35-4	ND		7.93	ND		0.639	ND		123	ND		123	-	-	-
Tertiary butyl Alcohol	75-65-0	ND		15.2	-		-	ND		234	ND		235	ND		1.52
Methylene chloride	75-09-2	ND		17.4	ND		0.688	ND		268	ND		270	4.41		1.74
3-Chloropropene	107-05-1	ND		6.26	ND		0.924	ND		96.7	ND		97.3	ND		0.626
Carbon disulfide	75-15-0	67.6		6.23	ND		1.34	ND		96.2	ND		96.8	ND		0.623
Freon-113	76-13-1	16.5		15.3	ND		0.721	ND		237	ND		238	ND		1.53
trans-1,2-Dichloroethene	156-60-5	ND		7.93	-		-	ND		123	ND		123	ND		0.793
1,1-Dichloroethane	75-34-3	119		8.09	ND		0.934	ND		125	348		126	ND		0.809
Methyl tert butyl ether	1634-04-4	ND		7.21	ND		0.82	ND		111	ND		112	ND		0.721
2-Butanone	78-93-3	ND		14.7	ND		0.908	ND		228	ND		229	ND		1.47
cis-1,2-Dichloroethene	156-59-2	ND		7.93	ND		2.05	ND		123	ND		123	-	-	-
Ethyl Acetate	141-78-6	ND		18	ND		0.908	ND		278	ND		280	ND		1.8
Chloroform	67-66-3	566		9.77	ND		1.09	ND		151	ND		152	ND		0.977
Tetrahydrofuran	109-99-9	ND		14.7	1.12		0.754	ND		228	ND		229	ND		1.47
1,2-Dichloroethane	107-06-2	ND		8.09	ND		0.82	ND		125	ND		126	ND		0.809
n-Hexane	110-54-3	188		7.05	ND		1.7	ND		109	363		110	ND		0.705
1,1,1-Trichloroethane	71-55-6	2900		10.9	ND		1.54	35700		169	37900		170	-	-	-
Benzene	71-43-2	143		6.39	-		-	ND		98.7	ND		99.4	ND		0.639
Carbon tetrachloride	56-23-5	ND		12.6	ND		0.921	ND		194	ND		196	-	-	-
Cyclohexane	110-82-7	ND		6.88	ND		0.869	ND		106	ND		107	ND		0.688
1,2-Dichloropropane	78-87-5	ND		9.24	ND		1.74	ND		143	ND		144	ND		0.924
Bromodichloromethane	75-27-4	19.9		13.4	ND		2.07	ND		207	ND		208	ND		1.34
1,4-Dioxane	123-91-1	ND		7.21	ND		0.852	ND		111	ND		112	ND		0.721
Trichloroethene	79-01-6	ND		10.7	ND		1.37	ND		166	ND		167	-	-	-
2,2,4-Trimethylpentane	540-84-1	ND		9.34	ND		0.869	ND		144	ND		145	ND		0.934
Heptane	142-82-5	125		8.2	ND		0.983	ND		127	261		127	ND		0.82
cis-1,3-Dichloropropene	10061-01-5	ND		9.08	ND		0.983	ND		140	ND		141	ND		0.908
4-Methyl-2-pentanone	108-10-1	ND		20.5	ND		0.983	ND		316	ND		318	ND		2.05
trans-1,3-Dichloropropene	10061-02-6	ND		9.08	ND		1.04	ND		140	ND		141	ND		0.908
1,1,2-Trichloroethane	79-00-5	ND		10.9	ND		1.2	ND		169	ND		170	ND		1.09
Toluene	108-88-3	306		7.54	ND		1.2	ND		116	ND		117	0.795		0.754
2-Hexanone	591-78-6	ND		8.2	ND		1.2	ND		127	ND		127	ND		0.82
Dibromochloromethane	124-48-1	ND		17	ND		1.48	ND		263	ND		265	ND		1.7
1,2-Dibromoethane	106-93-4	ND		15.4	ND		2.13	ND		237	ND		239	ND		1.54
Tetrachloroethene	127-18-4	ND		13.6	-		-	ND		210	ND		211	-	-	-
Chlorobenzene	108-90-7	ND		9.21	ND		0.921	ND		142	ND		143	ND		0.921
Ethylbenzene	100-41-4	61.2		8.69	ND		0.869	ND		134	ND		135	ND		0.869
p/m-Xylene	179601-23-1	153		17.4	ND		1.74	ND		268	ND		270	ND		1.74
Bromoform	75-25-2	ND		20.7	ND		2.07	ND		319	ND		322	ND		2.07
Styrene	100-42-5	34.1		8.52	ND		0.852	ND		132	ND		132	ND		0.852
1,1,2,2-Tetrachloroethane	79-34-5	ND		13.7	ND		1.37	ND		212	ND		214	ND		1.37
o-Xylene	95-47-6	68.6		8.69	ND		0.869	ND		134	ND		135	ND		0.869
4-Ethyltoluene	622-96-8	55.1		9.83	ND		0.983	ND		152	ND		153	ND		0.983
1,3,5-Trimethylbenzene	108-67-8	82.6		9.83	ND		0.983	ND		152	ND		153	ND		0.983
1,2,4-Trimethylbenzene	95-63-6	189		9.83	ND		0.983	ND		152	ND		153	ND		0.983
Benzyl chloride	100-44-7	ND		10.4	ND		1.04	ND		160	ND		161	ND		1.04
1,3-Dichlorobenzene	541-73-1	ND		12	ND		1.2	ND		186	ND		187	ND		1.2
1,4-Dichlorobenzene	106-46-7	ND		12	ND		1.2	ND		186	ND		187	ND		1.2
1,2-Dichlorobenzene	95-50-1	ND		12	ND		1.2	ND		186	ND		187	ND		1.2
1,2,4-Trichlorobenzene	120-82-1	ND		14.8	ND		1.48	ND		229	ND		231	ND		1.48
Hexachlorobutadiene	87-68-3	ND		21.3	ND		1.48	ND		330	ND		332	ND		2.13
VOLATILE ORGANICS IN AIR BY SIM																
Vinyl chloride	75-01-4	-		-	ND		0.051	-		-	-		-	ND		0.051
1,1-Dichloroethene	75-35-4	-		-	ND		0.079	-		-	-		-	ND		0.079
cis-1,2-Dichloroethene	156-59-2	-		-	ND		0.079	-		-	-		-	ND		0.079
1,1,1-Trichloroethane	71-55-6	-		-	0.715		0.109	-		-	-		-	ND		0.109
Carbon tetrachloride	56-23-5	-		-	0.591		0.126	-		-	-		-	0.528		0.126
Trichloroethene	79-01-6	-		-	ND		0.107	-		-	-		-	ND		0.107
Tetrachloroethene	127-18-4	-		-	0.312		0.136	-		-	-		-	ND		0.136

NOTES:
ND = Not Detected
NA = Not Applicable
ug/m3 = microgram per cubic meter
Q = Data Qualifier

APPENDIX F – O&M MANUAL (PREPARED FOR ALL ACTIVE ECs)

SSDS OPERATIONS AND MAINTENANCE MANUAL

Glennwood Container Site
NYSDEC Site Number: C360154

72 Alexander Street,
Block 2608, Lot 25
City of Yonkers, Westchester County, New York

PREPARED FOR:

Mures Alexander LLC
214 Starr Street
Brooklyn, New York 11237

PREPARED BY:
Equity Environmental Engineering, a Division of GZA GeoEnvironmental (GZA)
55 Lane Road
Farifield, New Jersey 07004
973-774-3530

File No. 12.0077558.00

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Appendices

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Appendix B SSDS Component Catalog Sheets
Appendix C As-Built Drawings
Appendix D Westchester County Department of Health Certificate to Operate Emission Points.

Section 1 Sub-Slab Depressurization Systems

1.1 Purpose

The purpose of this document is to provide guidance on the proper operation and maintenance of the active sub-slab depressurization system (SSDS) installed at 72 Alexander Street, City of Yonkers, Westchester County, New York.

1.2 Site Operation and Maintenance Plan Requirements

This operations and maintenance (O&M) Plan has been prepared for the site to address in detail, the institutional and engineering controls required for the site.

Provisions covered by this plan include:

- Parties responsible for implementation of the O&M Plan;
- Contact Information to be posted at the site for residents in case a need arises;
- SSDS operation and maintenance requirements in accordance with most recent NYSDOH guidance document, "Guidance for Evaluating Soil Vapor Intrusion in the State of New York";
- Schedule of inspections and applicable testing in accordance with guidance or annually whichever is more frequent along with applicable inspections forms for use; and
- Copies of all equipment manuals, product materials guides or manuals.

A copy of the O&M Plan shall be maintained on site and in the property manager's offices. Original inspection forms shall be maintained at the offices of the Owners: Mures Alexander LLC, 214 Starr Street, Brooklyn, New York 11237.

Section 2 Implementation of the O&M Plan

2.1 Parties Responsible for implementation of the O&M Plan

Mures Alexander LLC, is responsible for operation and maintenance of the SSDS installed at 72 Alexander Street, City of Yonkers, Westchester County, New York.

2.2 Contact Information

Ioan Sita / President
Starr Windows/Doors
214 Starr Street, Brooklyn, NY 11237
Ioan.sita@starrwin.com
516-860-8609

Yonker Fire Department Station 1 Ladder 71 / Rescue 1
5-7 New School Street
Yonkers, NY 10701
Phone: 911

Yonkers Police Department
104 S Broadway
Yonkers, NY 10701
Phone: 914-377-7900 or 911

If there is an emergency, the facility must call 911. In non-emergency situations, report the issue to Ioan Sita (see contact information above).

2.3 Sub Slab Depressurization System Description

The existing building has a SSDS trenches, and a Cover installed within the building. The active SSDS, will be operated under the Site Management Plan (SMP). The SSDS consists of five extraction trenches, five monitoring points, and five blowers in the footprint of the existing building. The extraction points are horizontal, perforated, piping designed to provide a pathway for vapors to be drawn in and evacuated. The SSDS trenches were backfilled to within four inches of finish grade and a 20-mil poly liner was installed over the piping and anchored to the edges of the concrete. The SSDS included a layer of ¾-inch poorly graded, clean, crushed stone in which the piping was situated. The piping was wrapped in a geotextile to prevent clogging. The piping was run vertically to the ceiling of the building and connected using steel pipe. The vertical run of each riser was topped with a blower.

2.3.2 SSDS Riser Pipe

The 4-inch riser pipes for each separate SSDS system is steel. It was installed in 10-foot sections with no-hub couplings vertically through the building roof. It was supported every 6-feet along the building wall.

2.3.3 SSDS Blowers

The five SSDS blowers (EP-01, EP-02, EP-03, EP-04, EP-05) installed were fantech® Rn 4EC-4 Inline Radon Fan. They were installed on the roof of the building in accordance with NYSDOH requirements and connected to the building electrical system by a NY licensed electrician. They were also connected to the building electrical system with appropriate circuit breakers.

2.3.4 Monitoring System

There are five monitoring points (MP-1, MP-2, MP-3, MP-4, MP-5) in the floor of the building to evaluate the efficacy of the SSDS. Five Vapor Pins™ were installed in accordance with the manufacturers recommendations and are used as measuring points in the sub-slab pressure field. On an annual basis, they will be connected to a micromanometer to measure the vacuum being created by the SSDS. The minimum vacuum must be -0.004 inches of water. Based on the results

of the measurements, the system will continue to operate as planned or it may be modified to improve its performance.

The specified vacuum gauge (Dwyer Series 2-500 Minihelic® II Differential Pressure Gauge) and alarm system (Sentinel Cloud Based Monitoring – Sensaphone Remote Monitoring Solutions) must also be inspected to determine if they are operating properly on an annual basis. Appropriate maintenance must be conducted if they are not.

Section 3 Maintenance

Vapor Intrusion Mitigation Systems should be inspected annually if no abnormalities are observed and if the system is operating within the intended performance range. Maintenance on the SSDS system shall be performed by qualified maintenance personnel.

The following are the items to be checked during the scheduled inspections. It is assumed that if they are failing in any respect, repairs will be made immediately.

- **Sealing:** Floor and wall penetration sealing should remain in good condition, and all openings should be sealed. If floor caulking is damaged or missing, system performance could be compromised.

- **Pipe**: Pipe should be checked to ensure no damage or leaks have occurred. All exposed interior and exterior pipe should be inspected.

- **Blower**: The blower should be checked for any visual signs of damage or sounds that it may not be operating properly. Applied vacuum and system airflow should be recorded.

- **Gate Valves:** Gate valves should be visually inspected for cracks. The position of each gate valve should be recorded to ensure no changes have been made. The position should be recorded as the approximate percentage open**.**

- **Permanent Sub Slab Vacuum Ports**: Sub slab vacuum should be recorded at all permanent sub slab test ports. If the minimum vacuum is not being achieved, the system should be further evaluated to determine why, and appropriate modifications/repairs made.

Appendix A - Inspection Schedule and Documentation Form

System component	Date	Condition/readings	
Sealing			
Pipe			
	Date	Average airflow (cfm)	Average Static Vacuum ("W.C.)
Blower 1			
Blower 2			
Blower 3			
Blower 4			
Blower 5			
Sub Slab Vacuum Port	Date	Gate Valve Position (% open)	Average Vacuum ("W.C.)
Riser#1			
Riser#2			
Riser#3			
Riser#4			
Riser#5			
	Date	Average Vacuum ("W.C.)	
MP-1			
MP-2			
MP-3			
MP-4			
MP-5			
Concrete Cover System Within Building Notes:			
Concrete Cover System Outside Building Notes:			

Appendix B – SSDS Component Catalog Sheets

Rn 4EC-4 Inline Radon Fan

Item #: 99923

Variant : 120V 1~ 60Hz

Description

- Use for **High Suction, High Airflow** applications
- Equipped with EC Motor
- Speed Control Included
- LDVI™ Couplings Included
- Airtight Housing Guaranteed
- Large Electrical Box
- Zero Leakage

Active radon mitigation systems employ specialized fans to exhaust radioactive radon gas from underneath building structures via a sealed pipe system. These systems are designed to remove radon gas before it migrates into the building envelope.

As the most powerful model in Fantech's family of Radon Mitigation fans, the **Rn4EC** can create 4.9" of suction while moving 20 cfm, as well as move 313...

Find more details in our online catalogue

Technical parameters

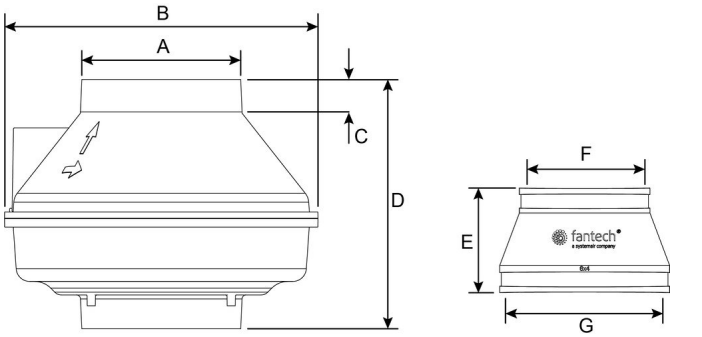
Norminal data		
Voltage (nominal)	120	V
Frequency	60	Hz
Phase(s)	1~	
Input power	169	W
Input current	2.1	A
Impeller speed	4,084	r.p.m.
Air flow	max 555	cfm
Protection/Classification		
Enclosure class, motor	IP54	
Insulation class	B	
Certificate	HVI, cULus	
Dimensions and weights		
Weight	7.8	lb

Performances

Model	Speed	Ctrl Voltage	HVI Certified Rating(s)					
			High Static/Low Flow			Low Static/High Flow		
			Inch WC	CFM	W	Inch WC	CFM	W
Rn4EC-4	100%	10V	4.5	39	141	0.2	320	174
	80%	8V	3.14	31	84	0.2	300	135
	60%	6V	1.56	20	33	0.2	210	52

NOTE: Performance is based on 4 inch diameter ducting.

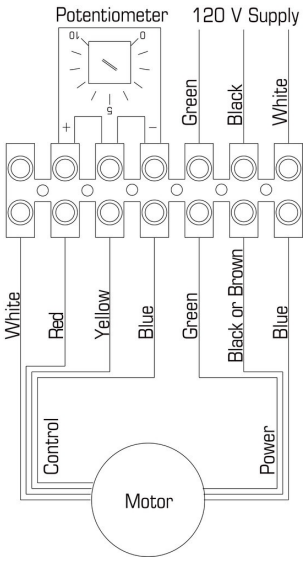
Dimensions



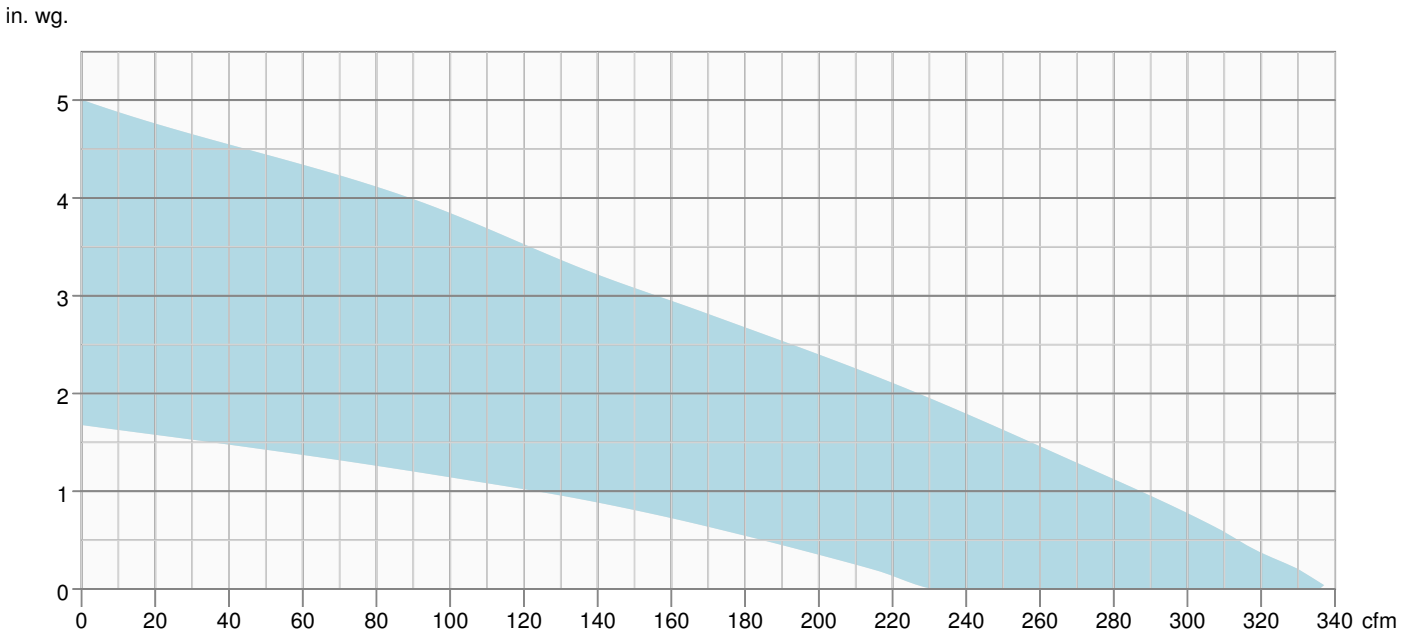
Model	A	B	C	D	E	F	G
Rn2EC	4 15/32 (114)	10 (254)	1 1/4 (32)	9 1/4 (235)	-	-	-
Rn4EC-3	5 7/8 (149)	11 1/2 (292)	1 1/4 (32)	9 1/4 (235)	4 (102)	3 1/2 (89)	6 (152)
Rn4EC-4	5 7/8 (149)	11 1/2 (292)	1 1/4 (32)	9 1/4 (235)	4 (102)	4 1/2 (114)	6 (152)

Dimensions in inches (mm).

Wiring



Performance curve



Hydraulic data	
Required air flow	-
Required static pressure	-
Working air flow	-
Working static pressure	-
Air density	0.075 lb/ft³
Power	-
Fan control - RPM	-
Current	-
Airflow efficiency	-
Control voltage	-
Supply voltage	-

Documents

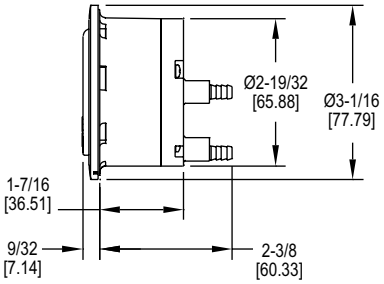
142001 Rn2EC-Rn4-EC OIPM EN FR.PDF

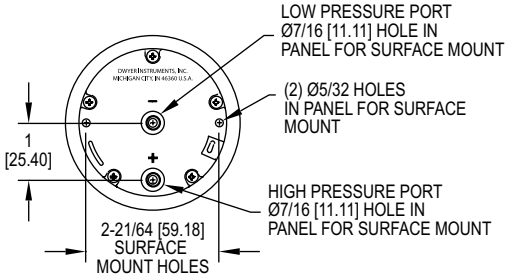
Dwyer

SERIES 2-5000

MINIHELIC® II DIFFERENTIAL PRESSURE GAGES

Combining High Accuracy, Compactness, Dependability, and Low Cost





Combining clean design, small size and low cost with enough accuracy for all but the most demanding applications our **SERIES 2-5000** Minihelic® II gage offers the latest in design features for a dial type differential pressure gage. It is our most compact gage but is easy to read and can safely operate at total pressures up to 30 psig.

FEATURES/BENEFITS

- Removable lens and rear-housing provides easy, cost-effective servicing
- Accuracy and value provides an excellent solution for OEM and user applications
- Durable housing materials make it well-suited for rough environments and total high pressure

APPLICATIONS

- Room positive pressure sensing
- Cabinet air-purging
- Medical respiratory equipment
- Air samplers
- Electronic air cooling systems
- Laminar flow hoods
- Local indication on filter status
- Face velocity on fume hood
- Duct pressures

SPECIFICATIONS
Service: Air and compatible gases.
Wetted Materials: Consult factory.
Housing: Glass filled nylon; polycarbonate lens.
Accuracy: ±5% of FS at 70°F (21.1°C).
Pressure Limits: 30 psig (2.067 bar) continuous to either pressure connection.
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).
Size: 2-1/16″ (52.39 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: Barbed, for 3/16″ ID tubing (standard); 1/8″ male NPT (optional).
Weight: 6 oz (170.1 g).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).
Caution: For use only with air or compatible non-corrosive gases.

Dwyer

SERIES 2-5000

MINIHELIC® II DIFFERENTIAL PRESSURE GAGES

Combining High Accuracy, Compactness, Dependability, and Low Cost

Housing is molded from strong mineral and glass filled nylon.

Pointer stops of molded rubber prevent pointer over-travel without damage.

Full view lens is removable and molded of acrylic.

Aluminum scale litho-printed black on white, enhances readability.

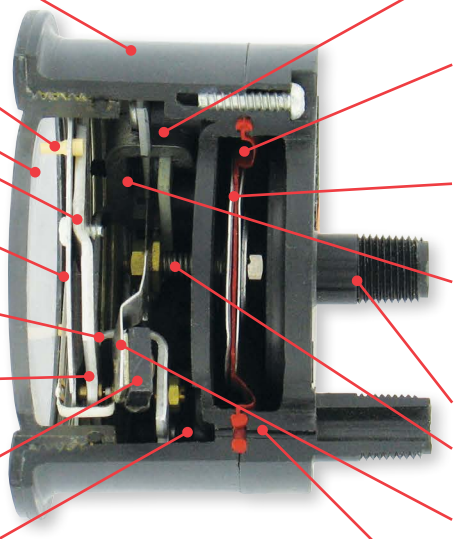
Red tipped aluminum pointer, rigidly mounted to helix is easy to see.

Wishbone assembly provides mounting for helix, helix bearings, and pointer shaft.

Jewel bearings provide virtually friction-free helix motion.

Helix is free to rotate in jewel bearings. It aligns with magnetic field of magnet to transmit pressure indications to pointer.

Zero adjustment screw, located behind the removable lens, eliminates tampering.



Range spring calibration clamp fixes live length of spring for proper gage calibration and is factory set and sealed.

Silicone rubber diaphragm allows accurate response to a broad range of temperatures and at extremely low pressure. Incorporates blow out area for overpressure protection.

Diaphragm support plates of lightweight aluminum on each side of the diaphragm minimize position or attitude sensitivity and help define pressure area.

Flat leaf range spring reacts to pressure on the diaphragm. Live length is adjustable for calibration. Small amplitude of motion minimizes inaccuracies and assures long life.

Low pressure tap connects to rear chamber.

Coil spring link provides a resilient connection between the diaphragm and the range spring.

Ceramic magnet mounted on a molded bracket at the end of the range spring rotates the helix without direct mechanical linkage.

High pressure tap connects with the front chamber through passageway in the plastic case and a sealing ring molded into the edge of the diaphragm.

MODEL CHART

Model	Range, Inches of Water	Model	Range, MM of Water
2-5000-0	0-0.5	2-5000-25MM	0-25
2-5001	0-1.0	2-5000-50MM	0-50
2-5002	0-2.0	2-5000-100MM	0-100
2-5003	0-3.0		
2-5005	0-5.0	Model	Range, Pascals
2-5010	0-10	2-5000-125PA	0-125
2-5020	0-20	2-5000-250PA	0-250
2-5040	0-40	2-5000-500PA	0-500
2-5060	0-60		
2-5100	0-100	Model	Range, kPa
		2-5000-1KPA	0-1
Model	Range, PSI	2-5000-3KPA	0-3
2-5205	0-5		

OPTIONS

To order add suffix:	Description
-NPT	1/8″ male NPT connections
Example: 2-5001-NPT	
-BB	Bottom barbed surface mount
Example: 2-5001-BB	
-NIST	NIST traceable calibration certificate
Example: 2-5001-NIST	
-FC	Factory calibration certificate
Example: 2-5001-FC	

ACCESSORIES

Model	Description
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
A-434	Portable kit
A-489	4″ straight static pressure tip with flange
A-497	Surface mounting bracket
A-609	Air filter kit
A-480	Plastic static pressure tip

SURFACE MOUNTING

Optional surface mounting with back mounting plate allows for quick installation to any surface. Process connections are barbed and point downwards. Add -BB for bottom barbed surface mount option.

PANEL MOUNTING

Mounting hardware is supplied with the Minihelic® II gage for panel mounting through a single hole, 2-5/8″ (67 mm) in diameter. Panel thickness up to 1/2″ (13 mm) can be accommodated with the hardware supplied. If necessary, surface mounting of the gage can be accomplished by means of two 4-40 screws into the tapped mounting bracket stud holes in the rear of the gage. Surface mounting requires clearance holes in the panel for the two pressure taps.

Process Tubing Options: See page 489 (Gage Tubing Accessories)

Full Port Threaded Ball Valve

Lead Free FNPT x FNPT

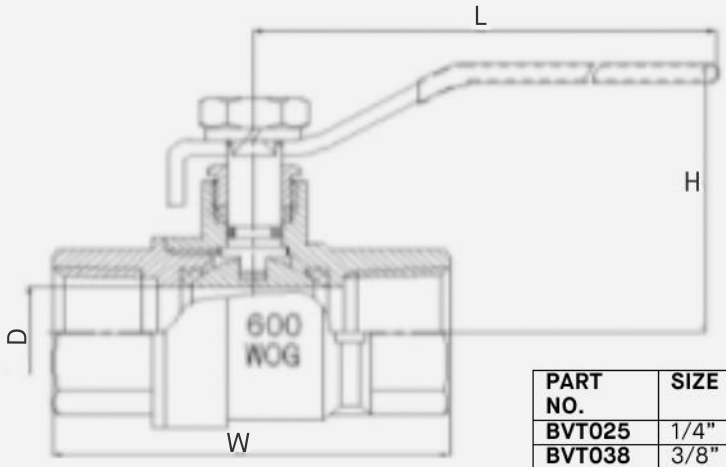
FEATURES

· DZR Lead Free Brass – Makes the ball valve resistant to dezincification corrosion and safe to use in commercial and residential drinking water systems.

· Blow-Out Proof Stem Design - Ensures a safe, reliable seal.

· Built for versatility - Can withstand temperatures from -20° F to 300° F for use in a wide-variety of systems.

· Rated for Durability - Has a water, oil, and gas rating of 600psi and a working steam pressure of 150 psi.



PART NO.	SIZE	D	L	H	W	Cv	Wt. (lbs)
BVT025	1/4"	0.394	3.46	1.68	1.73	8.23	0.306
BVT038	3/8"	0.394	3.46	1.68	1.73	8.23	0.302
BVT050	1/2"	0.591	3.46	1.81	2.24	18.55	0.445
BVT075	3/4"	0.748	4.29	2.09	2.52	29.76	0.750
BVT100	1"	0.984	4.29	2.25	2.97	51.55	1.140
BVT125	1-1/4"	1.259	5.63	2.52	3.44	84.42	1.755
BVT150	1-1/2"	1.574	5.63	2.74	3.88	131.93	2.412
BVT200	2"	1.949	5.63	3.03	4.29	200.35	3.380
BVT250	2-1/2"	2.520	7.76	4.25	5.53	338.43	7.030
BVT300	3"	2.894	8.19	4.58	6.14	445.44	9.656
BVT400	4"	3.839	9.25	5.49	7.79	783.88	18.305

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Home > SCH 80 PVC Sample Port Ball Valve - 1/4 Inch MNPT X Barb

← View All All PVC (Fittings & Valves)

SCH 80 PVC Sample Port Ball Valve - 1/4 Inch MNPT X Barb

SKU: 13PVC80SP025

Quantity 1

ADD TO CART

← View All All PVC (Fittings & Valves)

Description | Warranty | Shipping and Delivery | Exchanges | Customer Review

SCH 80 PVC 1/4" SAMPLE PORT VALVE WITH HOSE BARB AND CHEMICAL RESISTANT VITON O-RING.

SAMPLE PORT VALVE -

HOSE BARB FOR 1/4" ID HOSE X 1/4" BSPP CONNECTION, COMES WITH 1/4" PVC ADAPTER TO CONVERT BSPP CONNECTION TO NPT. CHEMICAL RESISTANT BUNA-N SEALING WASHER INCLUDED.

This Sch 80 PVC Sample Port Valve is a ball valve is made of PVC (polyvinyl chloride) for less weight than metals, and has a lever handle for on/off manual control. This inline valve has 1/4" male BSPP threads and comes with a National Pipe Taper (NPT) adapter to connect to a female threaded pipe and a 1/4" ID hose connection to connect to a hose going in the same direction. This valve has a Viton Rubber seal for increased chemical resistance. This inline ball valve is suitable for chemical processing and water and wastewater applications.

Ball valves use a spherical disc to control the flow between pipes, tubes, or hoses. Flow is allowed when the hole that pierces the ball-shaped disc is in line with the inlet and outlet of the valve and is blocked when the ball is horizontally swiveled 90 degrees, so that the hole of the ball is perpendicular to the opening of the valve. Ball valves can be referred to as full port or reduced port (also known as regular or standard port) depending on the inner diameter or the valve. A ball valve is full port if the hole of the ball is the same size as the inner diameter of the connecting pipeline (resulting in lower friction) and termed reduced port if the hole of the valve is one pipe size smaller than the pipe, resulting in less flow through the valve than through the shaft of the pipe. Ball valves may have a handle or lever that aligns with the ball's position (open or closed) for manual operation. They are primarily used in air, gas, liquid, and steam applications.

CUSTOMERS HAVE ALSO PURCHASED

ERA Sch 80 PVC 2 Inch True Union Ball Valve, Socket

$ 32.99

OPTIONS

ERA Sch 80 PVC 2 Inch Union, Socket, NSF Compliant

$ 16.92

OPTIONS

ERA SCH 80 PVC 6 Inch Compact Ball Valve, Socket X Socket

$ 169.99

ADD TO CART

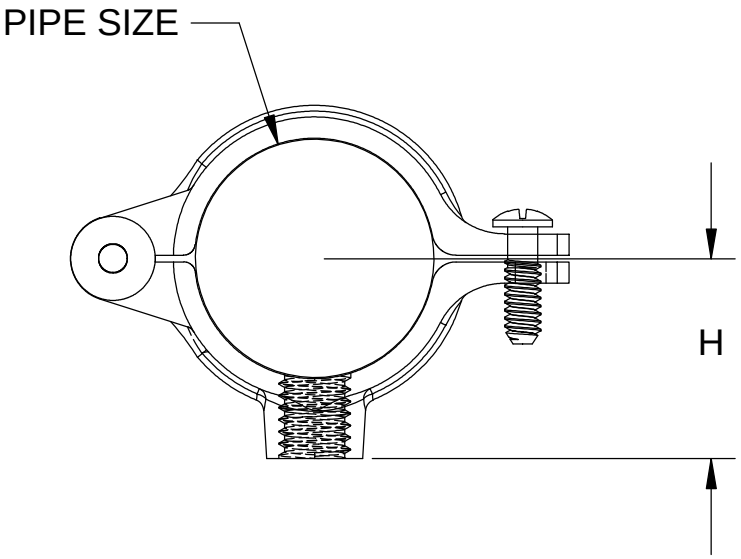
ERA Sch 80 PVC 1 Inch True Valve, Socket

$ 15.99

OPTIONS

View All All PVC (Fittings & Valves)

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GREENFIELD MFG CO ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GREENFIELD MFG CO IS PROHIBITED.



PIPE SIZE	Thread Rod	H	WT / C APPROX	MAX REC LOAD LBS
3/8	3/8	0.69	10	180
1/2	3/8	0.82	10	180
3/4	3/8	0.94	12	180
1	3/8	1.06	14	180
1-1/4	3/8	1.23	19	180
1-1/2	3/8	1.31	21	180
2	3/8	1.62	30	180
2-1/2	1/2	1.93	55	300
3	1/2	2.38	80	300
4	1/2	2.87	110	300

IMPORTED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS +/- 1/8 DECIMALS .XX +/- .03 .XXX +/- .01 ANGLES .XX + 1

MATERIAL
DUCTILE IRON
ZINC PLATED FINISH

DO NOT SCALE DRAWING

CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE

APPROVALS		DATE
DRAWN	EG	9/21
CHECKED	LB	9/21

GREENFIELD MFG CO
9800 Bustleton Ave,Philadelphia,Pa 19115

GALV SPLIT RING IRON PIPE

A P/N FIG 385 REV.

SCALE CAD FILE: 385.SLDDRW SHEET OF

- ALL PRODUCTS
- VAPOR PIN® KITS
- VAPOR PIN® INDIVIDUAL PRODUCTS
- VAPOR PIN® SECURED COVERS
- VAPOR PIN® TUBING
- VAPOR PIN® MISC.
- VAPOR PIN® SHOPPING CART
- VAPOR PIN® CHECKOUT

SHOPPING CART

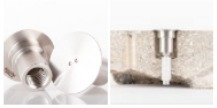
CHECKOUT

ANNOUNCEMENTS

Vapor Pin

The NICOLE Latin America network, in association with Vapor Pin Enterprises, Inc. Pin, would like to invite you to a

OUR FEATURED PRODUCTS



Stainless Steel Secured Cover

1

ADD TO CART

Description | **Additional information**

Additional Information

Height	1.59″
ID	0.72″
Top Diameter	2″
Material	Stainless Steel
Weight	.80Lb

Vapor Pin Cover & Drill Guide SOP 3-16-2018

This item requires the purchase of the items below

Spanner for Secured Cover

1 ADD TO CART

Privacy - Terms

- ALL PRODUCTS
- VAPOR PIN® KITS
- VAPOR PIN® INDIVIDUAL PRODUCTS
- VAPOR PIN® SECURED COVERS
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CHECKOUT

ANNOUNCEMENTS

Vapor Pin

The NICOLE Latin America network, in association with Vapor Pin Enterprises, Inc. Pin, would like to invite you to a

OUR FEATURED PRODUCTS

Stainless Steel Vapor Pin® Sampling Device

★★★★★ (1 customer review)

★★★★★

Shannon.Petch – July 21, 2014:

I have had the opportunity to use these vapor pins on several vapor intrusion projects recently and cannot say enough good things about this technology!! One such project included numerous residential and commercial properties that are part of the Brownfield Cleanup Program. Of the literally hundreds of pins we installed, we only needed to provide additional help getting a tight seal (i.e. plumber's wax) on TWO of them (and these were in residential crawl spaces with barely a 2" slab). The time (and subsequent money) my company has saved, make taking the jump into

1

ADD TO CART

Description | **Additional information**

Additional Information

Length:	**3.22"**
ID:	0.13
Material:	Stainless Steel
Weight:	.15Lb

Vapor Pin SOP 3-16-2018 Web

Privacy - Terms

- ALL PRODUCTS
- VAPOR PIN® KITS
- VAPOR PIN® INDIVIDUAL PRODUCTS
- VAPOR PIN® SECURED COVERS
- VAPOR PIN® TUBING
- VAPOR PIN® MISC.
- VAPOR PIN® SHOPPING CART
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SHOPPING CART

CHECKOUT

ANNOUNCEMENTS

Vapor Pin

The NICOLE Latin America network, in association with Vapor Pin Enterprises, Inc.

OUR FEATURED PRODUCTS

Vapor Pin® Sieve– Brass and Stainless Steel

Stainless Steel

Clear selection

1 ADD TO CART

Description | Additional information

Additional Information

Height	**1.02”**
OD	0.5”
ID	.094”
Material	Stainless Steel
Weight	.06Lb

Related Items

Privacy - Terms

- ALL PRODUCTS
- VAPOR PIN® KITS
- VAPOR PIN® INDIVIDUAL PRODUCTS
- VAPOR PIN® SECURED COVERS
- VAPOR PIN® TUBING
- VAPOR PIN® MISC.
- VAPOR PIN® SHOPPING CART
- VAPOR PIN® CHECKOUT

SHOPPING CART

CHECKOUT

ANNOUNCEMENTS

Vapor Pin

The NICOLE Latin America network, in association with Vapor Pin Enterprises, Inc. Pin, would like to invite you to a

OUR FEATURED PRODUCTS

Bag of 20 Vapor Pin® Sleeves

– 20 Pieces

1

ADD TO CART

Description | Additional information

Additional Information

Height	1.57”
OD	.625”
ID	.375”
Material	Silicone

Related Items

Stainless Steel FLX-VP™

1 ADD TO CART

Stainless Steel Vapor Pin® Sampling Device

- ALL PRODUCTS
- VAPOR PIN® KITS
- VAPOR PIN® INDIVIDUAL PRODUCTS
- VAPOR PIN® SECURED COVERS
- VAPOR PIN® TUBING
- VAPOR PIN® MISC.
- VAPOR PIN® SHOPPING CART
- VAPOR PIN® CHECKOUT

SHOPPING CART

CHECKOUT

ANNOUNCEMENTS

Vapor Pin

The NICOLE Latin America network, in association with Vapor Pin Enterprises, Inc. Pin, would like to invite you to a

OUR FEATURED PRODUCTS

Bag of 20 Vapor Pin® Caps – 20 Pieces

1

ADD TO CART

Description | Additional information

Additional Information

Height	.669″
OD	.354″
ID	.275″
Material	Silicone

Related Items

Stainless Steel Vapor Pin® Sampling Device

1 ADD TO CART

Stainless Steel FLX-VP™

Privacy - Terms

SENTINEL

CLOUD BASED MONITORING

INSTALLATION AND SETUP GUIDE
VERSION 3.2

SENSAPHONE®

REMOTE MONITORING SOLUTIONS

Every effort has been made to ensure that the information in this document is complete, accurate and up-to-date. Sensaphone assumes no responsibility for the results of errors beyond its control. Sensaphone also cannot guarantee that changes in equipment made by other manufacturers, and referred to in this manual, will not affect the applicability of the information in this manual.

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First Edition, version 3.2, June 2023

Written and produced by SENSAPHONE®.

Please address comments on this publication to:

SENSAPHONE®

901 Tryens Road

Aston, PA 19014

Important Safety Instructions

Your Sentinel has been carefully designed to give you years of safe, reliable performance. As with all electrical equipment, however, there are a few basic precautions you should take to avoid hurting yourself or damaging the unit:

- Read the installation and operating instructions in this guide carefully. Be sure to save it for future reference.
- Read and follow all warning and instruction labels on the product itself.
- To protect the Sentinel from overheating, make sure all openings on the unit are not blocked. Do not place on or near a heat source, such as a radiator or heat register.
- Do not use your Sentinel near water, or spill liquid of any kind into it.
- Be certain that your power source matches the rating in the specifications of this manual. If you're not sure of the type of power supply to your facility, consult your dealer or local power company.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not overload wall outlets and extension cords, as this can result in the risk of fire or electric shock.
- Never push objects of any kind into this product through ventilation holes as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.
- To reduce the risk of electric shock, do not disassemble this product, but return it to Sensaphone Customer Service, or another approved repair facility, when any service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the unit is subsequently used.
- If anything happens that indicates that your Sentinel is not working properly or has been damaged, unplug it immediately and follow the procedures in the manual for having it serviced. Return the unit for servicing under the following conditions:

    1. The power cord or plug is frayed or damaged.
    2. Liquid has been spilled into the product or it has been exposed to water.
    3. The unit has been dropped, or the enclosure is damaged.
    4. The unit doesn't function normally when you're following the operating instructions.

- To reduce the risk of fire or injury to persons, read and follow these instructions:

    1. Use only the specified type and size battery.
    2. Do not dispose of the battery in a fire. The cell may explode. Check with local codes for possible special disposal instructions.
    3. Do not open or mutilate batteries. Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.
    4. Exercise care in handling batteries in order not to short the battery with conducting materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns.
    5. Remove main power connections before replacing the battery.

FCC Requirements

Part 15: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2 YEAR LIMITED WARRANTY

PLEASE READ THIS WARRANTY CAREFULLY BEFORE USING THE PRODUCT.

THIS LIMITED WARRANTY CONTAINS SENSAPHONE'S STANDARD TERMS AND CONDITIONS. WHERE PERMITTED BY THE APPLICABLE LAW, BY KEEPING YOUR SENSAPHONE PRODUCT BEYOND THIRTY (30) DAYS AFTER THE DATE OF DELIVERY, YOU FULLY ACCEPT THE TERMS AND CONDITIONS SET FORTH IN THIS LIMITED WARRANTY.

IN ADDITION, WHERE PERMITTED BY THE APPLICABLE LAW, YOUR INSTALLATION AND/OR USE OF THE PRODUCT CONSTITUTES FULL ACCEPTANCE OF THE TERMS AND CONDITIONS OF THIS LIMITED WARRANTY (HEREINAFTER REFERRED TO AS "LIMITED WARRANTY OR WARRANTY"). IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS THIS WARRANTY, INCLUDING ANY LIMITATIONS OF WARRANTY, INDEMNIFICATION TERMS OR LIMITATION OF LIABILITY, THEN YOU SHOULD NOT USE THE PRODUCT AND SHOULD RETURN IT TO THE SELLER FOR A REFUND OF THE PURCHASE PRICE. THE LAW MAY VARY BY JURISDICTION AS TO THE APPLICABILITY OF YOUR INSTALLATION OR USE ACTUALLY CONSTITUTING ACCEPTANCE OF THE TERMS AND CONDITIONS HEREIN AND AS TO THE APPLICABILITY OF ANY LIMITATION OF WARRANTY, INDEMNIFICATION TERMS OR LIMITATIONS OF LIABILITY.

1. **WARRANTOR**: IN THIS WARRANTY, WARRANTOR SHALL MEAN "DEALER, DISTRIBUTOR, AND/OR MANUFACTURER."

2. **ELEMENTS OF WARRANTY**: THIS PRODUCT IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIALS AND CRAFTSMANSHIP WITH ONLY THE LIMITATIONS AND EXCLUSIONS SET OUT BELOW.

3. **WARRANTY AND REMEDY**: TWO-YEAR WARRANTY — IN THE EVENT THAT THE PRODUCT DOES NOT CONFORM TO THIS WARRANTY AT ANY TIME DURING THE TIME OF TWO YEARS FROM ORIGINAL PURCHASE, WARRANTOR WILL REPAIR THE DEFECT AND RETURN IT TO YOU AT NO CHARGE.

THIS WARRANTY SHALL TERMINATE AND BE OF NO FURTHER EFFECT AT THE TIME THE PRODUCT IS: (1) DAMAGED BY EXTRANEOUS CAUSE SUCH AS FIRE, WATER, LIGHTNING, ETC. OR NOT MAINTAINED AS REASONABLE AND NECESSARY; OR (2) MODIFIED; OR (3) IMPROPERLY INSTALLED; OR (4) MISUSED; OR (5) REPAIRED OR SERVICED BY SOMEONE OTHER THAN WARRANTORS' AUTHORIZED PERSONNEL OR SOMEONE EXPRESSLY AUTHORIZED BY WARRANTOR'S TO MAKE SUCH SERVICE OR REPAIRS; (6) USED IN A MANNER OR PURPOSE FOR WHICH THE PRODUCT WAS NOT INTENDED; OR (7) SOLD BY ORIGINAL PURCHASER.

LIMITED WARRANTY, LIMITATION OF DAMAGES AND DISCLAIMER OF LIABILITY FOR DAMAGES: THE WARRANTOR'S OBLIGATION UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, AT THE WARRANTOR'S OPTION AS TO REPAIR OR REPLACEMENT. IN NO EVENT SHALL WARRANTORS BE LIABLE OR RESPONSIBLE FOR PAYMENT OF ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL AND/OR PUNITIVE DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO ANY LABOR COSTS, PRODUCT COSTS, LOST REVENUE, BUSINESS INTERRUPTION LOSSES, LOST PROFITS, LOSS OF BUSINESS, LOSS OF DATA OR INFORMATION, OR FINANCIAL LOSS, FOR CLAIMS OF ANY NATURE, INCLUDING BUT NOT LIMITED TO CLAIMS IN CONTRACT, BREACH OF WARRANTY OR TORT, AND WHETHER OR NOT CAUSED BY WARRANTORS' NEGLIGENCE. IN THE EVENT THAT IT IS DETERMINED IN ANY ADJUDICATION THAT THE LIMITED WARRANTIES OF REPAIR OR REPLACEMENT ARE INAPPLICABLE, THEN THE PURCHASER'S SOLE REMEDY SHALL BE PAYMENT TO THE PURCHASER OF THE ORIGINAL COST OF THE PRODUCT, AND IN NO EVENT SHALL WARRANTORS BE LIABLE OR RESPONSIBLE FOR PAYMENT OF ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL AND/OR PUNITIVE DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO ANY LOST REVENUE, BUSINESS INTERRUPTION LOSSES, LOST PROFITS, LOSS OF BUSINESS, LOSS OF DATA OR INFORMATION, OR FINANCIAL LOSS, FOR CLAIMS OF ANY NATURE, INCLUDING BUT NOT LIMITED TO CLAIMS IN CONTRACT, BREACH OF WARRANTY OR TORT, AND WHETHER OR NOT CAUSED BY

WARRANTORS' NEGLIGENCE.

WITHOUT WAIVING ANY PROVISION IN THIS LIMITED WARRANTY, IF A CIRCUMSTANCE ARISES WHERE WARRANTORS ARE FOUND TO BE LIABLE FOR ANY LOSS OR DAMAGE ARISING OUT OF MISTAKES, NEGLIGENCE, OMISSIONS, INTERRUPTIONS, DELAYS, ERRORS OR DEFECTS IN WARRANTORS' PRODUCTS OR SERVICES, SUCH LIABILITY SHALL NOT EXCEED THE TOTAL AMOUNT PAID BY THE CUSTOMER FOR WARRANTORS' PRODUCT AND SERVICES OR $250.00, WHICHEVER IS GREATER. YOU HEREBY RELEASE WARRANTORS FROM ANY AND ALL OBLIGATIONS, LIABILITIES AND CLAIMS IN EXCESS OF THIS LIMITATION.

INDEMNIFICATION AND COVENANT NOT TO SUE: YOU WILL INDEMNIFY, DEFEND AND HOLD HARMLESS WARRANTORS, THEIR OWNERS, DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, SUPPLIERS OR AFFILIATED COMPANIES, AGAINST ANY AND ALL CLAIMS, DEMANDS OR ACTIONS BASED UPON ANY LOSSES, LIABILITIES, DAMAGES OR COSTS, INCLUDING BUT NOT LIMITED TO DAMAGES THAT ARE DIRECT OR INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL, AND INCLUDING ATTORNEYS FEES AND LEGAL COSTS, THAT MAY RESULT FROM THE INSTALLATION, OPERATION, USE OF, OR INABILITY TO USE WARRANTORS' PRODUCTS AND SERVICES, OR FROM THE FAILURE OF THE WARRANTORS' SYSTEM TO REPORT A GIVEN EVENT OR CONDITION, WHETHER OR NOT CAUSED BY WARRANTORS' NEGLIGENCE.

YOU AGREE TO RELEASE, WAIVE, DISCHARGE AND COVENANT NOT TO SUE WARRANTORS, THEIR OWNERS, DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, SUPPLIERS OR AFFILIATED COMPANIES, FOR ANY AND ALL LIABILITIES POTENTIALLY ARISING FROM ANY CLAIM, DEMAND OR ACTION BASED UPON ANY LOSSES, LIABILITIES, DAMAGES OR COSTS, INCLUDING BUT NOT LIMITED TO DAMAGES THAT ARE DIRECT OR INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL, AND INCLUDING ATTORNEYS FEES AND LEGAL COSTS, THAT MAY RESULT FROM THE INSTALLATION, OPERATION, USE OF, OR INABILITY TO USE WARRANTORS' PRODUCTS AND SERVICES, OR FROM THE FAILURE OF THE WARRANTORS' SYSTEM TO REPORT A GIVEN EVENT OR CONDITION, WHETHER OR NOT CAUSED BY WARRANTORS' NEGLIGENCE, EXCEPT AS NECESSARY TO ENFORCE THE EXPRESS TERMS OF THIS LIMITED WARRANTY.

EXCLUSIVE WARRANTY: THE LIMITED WARRANTY OR WARRANTIES DESCRIBED HEREIN CONSTITUTE THE SOLE WARRANTY OR WARRANTIES TO THE PURCHASER. ALL IMPLIED WARRANTIES ARE EXPRESSLY DISCLAIMED, INCLUDING: THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR USE AND THE WARRANTY OF FITNESS FOR A

PARTICULAR PURPOSE AND THE WARRANTY OF NON-INFRINGEMENT AND/OR ANY WARRANTY ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IT MUST BE CLEAR THAT THE WARRANTORS ARE NOT INSURING YOUR PREMISES OR BUSINESS OR GUARANTEEING THAT THERE WILL NOT BE DAMAGE TO YOUR PERSON OR PROPERTY OR BUSINESS IF YOU USE THIS PRODUCT. YOU SHOULD MAINTAIN INSURANCE COVERAGE SUFFICIENT TO PROVIDE COMPENSATION FOR ANY LOSS, DAMAGE, OR EXPENSE THAT MAY ARISE IN CONNECTION WITH THE USE OF PRODUCTS OR SERVICES, EVEN IF CAUSED BY WARRANTORS' NEGLIGENCE. THE WARRANTORS ASSUME NO LIABILITY FOR INSTALLATION OF THE PRODUCT AND/OR INTERRUPTIONS OF THE SERVICE DUE TO STRIKES, RIOTS, FLOODS, FIRE, AND/OR ANY CAUSE BEYOND SELLER'S CONTROL, FURTHER SUBJECT TO THE LIMITATIONS EXPRESSED IN ANY LICENSE AGREEMENT OR OTHER AGREEMENT PROVIDED BY WARRANTORS TO PURCHASER.

THE AGREEMENT BETWEEN THE WARRANTORS AND THE PURCHASER, INCLUDING BUT NOT LIMITED TO THE TERMS AND CONDITIONS HEREIN SHALL NOT BE GOVERNED BY THE CONVENTION FOR THE INTERNATIONAL SALE OF GOODS. WHERE APPLICABLE, THE UNIFORM COMMERCIAL CODE AS ADOPTED BY THE STATE OF DELAWARE SHALL APPLY.

4. **PROCEDURE FOR OBTAINING PERFORMANCE OF WARRANTY**: IN THE EVENT THAT THE PRODUCT DOES NOT CONFORM TO THIS WARRANTY, THE PRODUCT SHOULD BE SHIPPED OR DELIVERED FREIGHT PREPAID TO A WARRANTOR WITH EVIDENCE OF ORIGINAL PURCHASE.

5. **LEGAL REMEDIES AND DISCLAIMER**: SOME JURISDICTIONS MAY NOT ALLOW, OR MAY PLACE LIMITS UPON, THE EXCLUSION AND/OR LIMITATION OF IMPLIED WARRANTIES, INCIDENTAL DAMAGES AND/OR CONSEQUENTIAL DAMAGES FOR SOME TYPES OF GOODS OR PRODUCTS SOLD TO CONSUMERS AND/OR THE USE OF INDEMNIFICATION TERMS. THUS, THE EXCLUSIONS, INDEMNIFICATION TERMS AND LIMITATIONS SET OUT ABOVE MAY NOT APPLY, OR MAY BE LIMITED IN THEIR APPLICATION, TO YOU. IF THE IMPLIED WARRANTIES CAN NOT BE EXCLUDED, AND THE APPLICABLE LAW PERMITS LIMITING THE DURATION OF IMPLIED WARRANTIES, THEN THE IMPLIED WARRANTIES HEREIN ARE TO BE LIMITED TO THE SAME DURATION AS THE APPLICABLE WRITTEN WARRANTY OR WARRANTIES HEREIN. THE WARRANTY OR WARRANTIES HEREIN MAY GIVE YOU SPECIFIC LEGAL RIGHTS THAT WILL DEPEND UPON THE APPLICABLE LAW. YOU MAY ALSO HAVE OTHER LEGAL RIGHTS DEPENDING UPON THE LAW IN YOUR JURISDICTION.

6. **CHOICE OF FORUM AND CHOICE OF LAW**: IN THE EVENT THAT A DISPUTE ARISES OUT OF OR IN CONNECTION WITH THIS LIMITED WARRANTY, THEN ANY CLAIMS OR SUITS OF ANY KIND CONCERNING SUCH DISPUTES SHALL ONLY AND EXCLUSIVELY BE BROUGHT IN EITHER THE COURT OF COMMON PLEAS OF DELAWARE COUNTY, PENNSYLVANIA OR THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF PENNSYLVANIA.

REGARDLESS OF THE PLACE OF CONTRACTING OR PERFORMANCE, THIS LIMITED WARRANTY AND ALL QUESTIONS RELATING TO ITS VALIDITY, INTERPRETATION, PERFORMANCE AND ENFORCEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF DELAWARE, WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW.

Effective date 02/25/2015

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CHAPTER 1: INSTALLATION

INTRODUCTION

Congratulations on your purchase of the Sentinel Monitoring System. The system is designed to be an easy, cost–effective, cloud–based monitoring and data logging system to notify you when equipment or conditions go awry. The internet browser–based programming makes the device easy to use from any computer or tablet. Monitored conditions can include temperature, humidity levels, pressure, flow, leak detection, UPS systems, and more. The system allows multiple users to be notified immediately of any detected problems. Notification can occur via voice call, e–mail or SMS (text message), however voice calls and text messages require a premium subscription plan. The internal battery backup system insures the unit will continue to run if main power fails.

FEATURES

The Sentinel includes the following key features:

- Twelve sensor inputs to monitor environmental conditions and/or alarm contacts from other equipment.
- 10/100BASE-T Ethernet port.
- Battery backup for uninterrupted performance.
- Compact design allows wall-mount or weatherproof installation.
- Notification via e–mail, text message (optional) and voice call (optional).
- Relay output capable of automatic or manual control.
- Cloud–based user interface for programming, data storage, and alarm delivery.
- Available in optional weatherproof NEMA 4X enclosure
- Available with cellular modem in weatherproof NEMA 4X enclosure

TECHNICAL SUPPORT

If any questions arise upon installation or operation of the Sentinel, please contact the Sensaphone Technical Service Department at 610.558.2700 and have the following information available:

- Date of purchase _____
- Serial number _____

Technical support is available from 8:00 AM to 5:00 PM, M-F, eastern time.

ABOUT THIS MANUAL

This manual comprises the instructions necessary to install and setup the Sentinel. You should thoroughly read this manual to establish a basic understanding of the system and keep it as a reference.

INSTALLATION AND CONFIGURATION

PHYSICAL DESCRIPTION

The Sentinel is housed in a 5.5” x 6.3” x 1.5” enclosure, which can be easily mounted on a wall or back panel.

LAYOUT

The Sentinel has connections for twelve sensor inputs, an Ethernet port, and 12VDC power. See figure below:

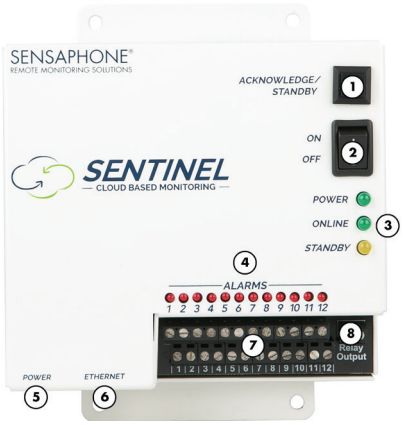


Figure 1: Front Panel Layout of the Sentinel

1) Acknowledge/Standby Button
2) On/Off Switch
3) Power, Online, Standby LEDs
4) Alarm LEDs
5) Power Jack
6) Ethernet Jack
7) Sensor Input Terminal Strip
8) Relay Output Input

RJ-45 10/100BASE-T ETHERNET PORT

This jack is for connecting to your network so that the device can communicate with the Sentinel servers. Two LEDs indicate when the Sentinel has a valid link (green) and transmitted/received data (yellow).

SENSOR INPUTS

The sensor inputs labeled zones 1-12 are designed to interface with normally open/normally closed devices, 2.8K or 10K temperature sensors and 4-20mA transducers.

POWER ON LED (GREEN)

This light indicates that the Sentinel unit is powered and operational.

ALARM LEDS (RED)

The Alarm LEDs indicate if an alarm exists.

ONLINE LED (GREEN)

This light indicates that the Sentinel unit is communicating with the Sentinel servers.

STANDBY LED (YELLOW)

This light indicates that the Sentinel unit is in standby mode.

ACKNOWLEDGE/ STANDBY BUTTON

When an unacknowledged alarm exists (as indicated by a blinking red alarm LED), briefly press the button and the alarm LED will stop blinking, indicating that the alarm is acknowledged. To enter Standby mode, press and hold the button for at least 5 seconds until the Standby LED lights up, then release. To exit from Standby mode, hold the button down for 5 seconds until the Standby LED turns off.

INSTALLATION

This section provides information on:

- Operating environment
- Installation
- Connecting sensors
- Network Configuration

PARTS REQUIRED

- Screwdriver and #8 screws
- Network Hub, Switch, or Router that supports 10 or 100 BASE-T with Internet access
- Computer w/Internet Connection

OPERATING ENVIRONMENT

Before you install the Sentinel be sure that your operating environment meets the physical requirements of the equipment.

Operating Temperature:	32º – 122º Fahrenheit (0º – 50º C)
Humidity:	5 – 90 %RH, non-condensing
Power:	115VAC 50/60 Hz outlet within 6’

POWER

Connect the included DC power supply to the power jack on the Sentinel and then plug the power adapter into a 115V AC power outlet.

NETWORK CONFIGURATION

The Sentinel requires an Internet connection to operate. Using the included network cable, connect the Sentinel to your 10/100 network hub, switch, or router. Note that your network must support DHCP for initial configuration. You can change it to a Static IP later if required (see chapter 2). The green ONLINE LED should light up within a few minutes indicating that the device has connected to the Sensaphone.net servers.

> Technical Info: The Sentinel communicates over port 443 (the standard TCP port that is used for websites which use SSL encryption), so this must be open for outbound communication. The device also makes use of port 123 for clock synchronization (NTP), so this must be open for UDP outbound.

WALL MOUNT INSTALLATION

The Sentinel can be wall mounted using dry wall anchors and (4) #8 screws. Follow the steps below:

1) Install four drywall anchors (if necessary). Attach the Sentinel using four #8 tapping screws. See Figure 2 for dimensions.

2) Attach sensors to the zone terminals.

3) Plug the power adaptor into a 115VAC 50/60Hz outlet.

4) Connect a CAT5 cable to the Ethernet port and connect to a 10/100 network hub, switch or router.

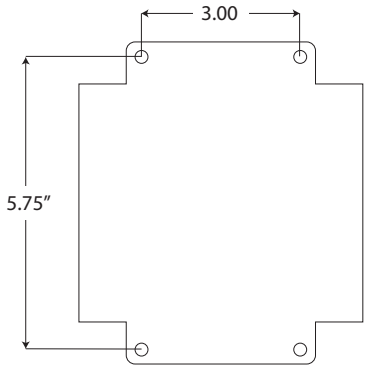


Figure 2: Sentinel mounting dimensions

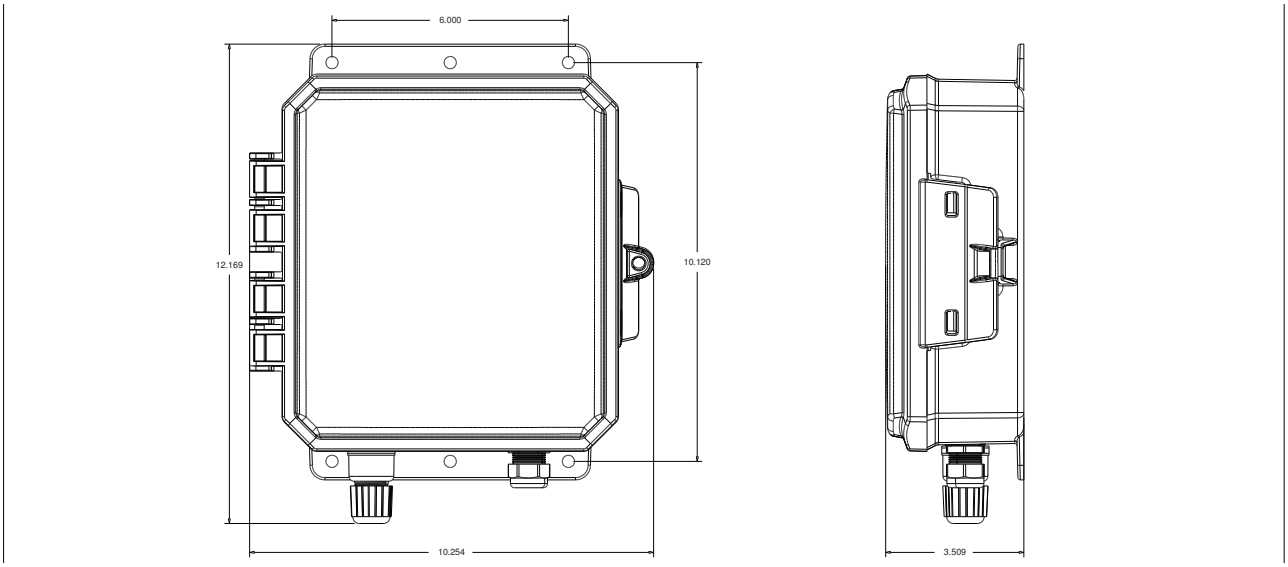


Figure 3: Enclosure mounting dimensions

CONNECTING SENSORS

The Sentinel is compatible with a wide variety of sensors including normally open/normally closed contacts, 2.8K and 10K temperature sensors, and 4–20mA current sources. Compatible sensors and accessories are shown on the Sentinel website. Sensors may be connected while the device is powered on or off. A proper size screwdriver is provided for your convenience. Contact Sensaphone or your Sensaphone reseller for assistance in selecting sensors for your monitoring requirements. A list of sensors and accessories is shown in Appendix B. Follow the instructions below to properly wire and configure the inputs for each type of electrical signal.

Warning: The inputs are designed to work with low voltage signals. DO NOT connect voltages greater than 3.3V to the inputs. DO NOT connect 120VAC to the inputs.

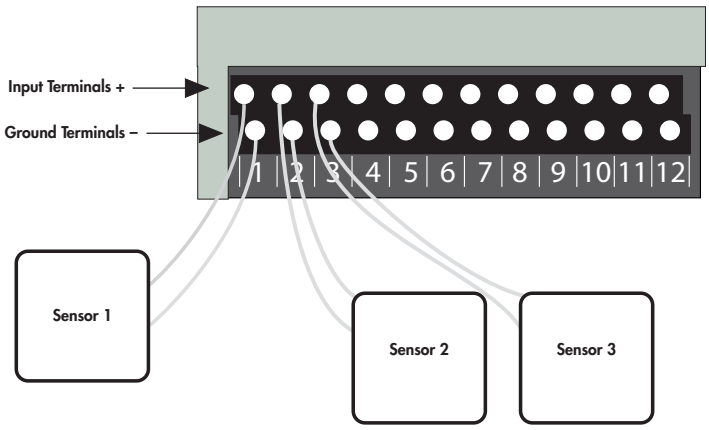
GENERAL WIRING CONSIDERATIONS

Most dry contact sensors can be connected to the Sentinel using inexpensive 2-conductor twisted-pair cable as small as #24 AWG. For temperature and 4–20mA sensors, use the wire chart below as a reference for selecting the appropriate wire gauge. Note that if the sensor is located far from the unit or if you are running cable in an electrically noisy environment, you should seriously consider using shielded cable. This will shield the signal from electrical interference, thereby preventing false readings and/or damage to the unit. For your convenience, Sensaphone has 22 gauge shielded cable available in 50' lengths (part number FGD-0010). To minimize electrical noise coupling between sensor wires and other wiring, follow the guidelines listed below:

- Route the power supply and network cables to the unit by a separate path then the wiring to the sensor inputs. Where paths must cross, their intersection should be perpendicular.
- Do not run sensor wiring and AC power in the same conduit.
- Segregate wiring by signal type. Bundle wiring with similar electrical characteristics together.
- If shielded cable is used, tie the shield to the input ground terminal.

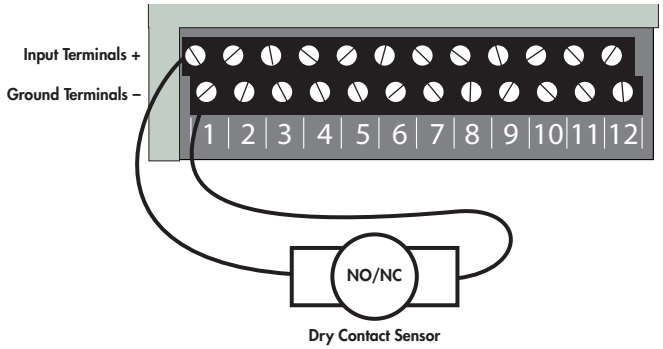
Wiring Distance	Minimum Wire Gauge
700'	#24 AWG
1500'	#22 AWG
2500'	#20 AWG

The zone terminal strip has an upper and lower level for connecting up to 12 sensors. The lower level terminals are all "ground" and are electrically connected together. The upper terminal strip is the positive connection for each sensor. See illustration below.



NORMALLY OPEN / NORMALLY CLOSED DRY CONTACTS

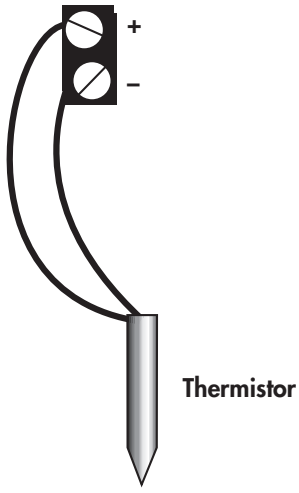
Dry contact sources consist of alarm relays or switches that are isolated and have no external voltage applied. These devices can be connected directly to the zone terminals without regard for polarity. Choose a zone and connect the wires to the corresponding screw terminals for that zone. The following figure shows how to connect a dry contact sensor:



Wiring a Dry Contact Sensor

2.8K/10K TEMPERATURE SENSORS

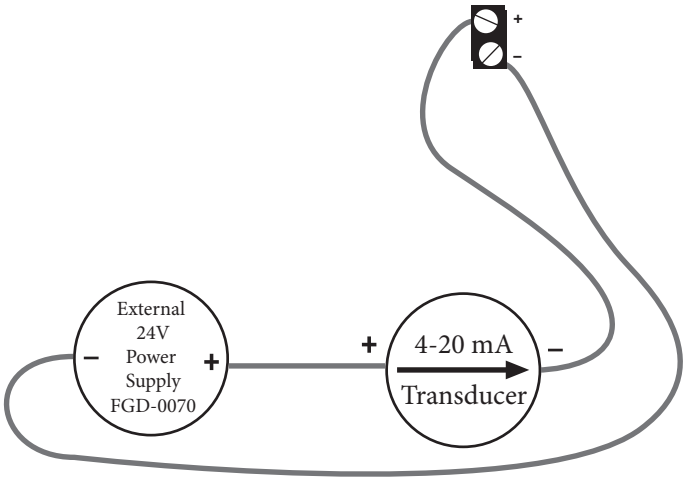
The Sentinel is compatible with 2.8K/10K temperature sensors that match the curve data listed in the tables in Appendix D. The monitoring temperature range of the 2.8K thermistor is -109 to 115°F (-85° to 57°C) and the 10K thermistor is -87° to 168°F (-66° to 76°C). Temperature sensors can be connected directly to the zone terminals without regard for polarity. Choose an alarm input and connect the wires to the corresponding screw terminals for that zone. 2.8K and 10K temperature sensors are available from Sensaphone. See Appendix B for part numbers. The figure below shows how to connect a temperature sensor:



Wiring a Temperature Sensor

4–20MA CURRENT LOOP TRANSDUCERS

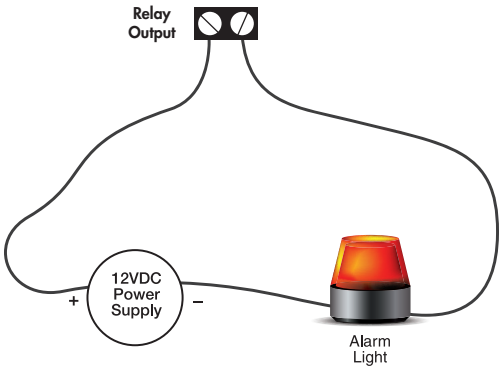
The inputs on the Sentinel are compatible with transducers that produce an analog output current of 4 to 20mA. Such transducers are available to measure tank and well levels, extreme temperatures, air pressure, water pressure, flow, voltage, current, rotational speed, etc. Contact our technical support department for assistance regarding your monitoring requirements (877-373-2700 or support@sensaphone.com). Follow the wiring diagrams below for connecting a 4–20mA device:



Wiring a 4–20mA device using an external 24 VDC supply.

RELAY OUTPUT WIRING

The Sentinel includes a relay output (switch) that can be used to turn on a light, siren, or other device whenever an alarm occurs. The output is a normally–open (i.e. off) dry contact that can be used for low voltage switching. The relay is rated for up to 30VAC/VDC 1 Amp. A sample wiring diagram is shown below:



The relay can be controlled manually (via the website or App) or automatically based on specific inputs or alarms. See chapter 3 for details.

BATTERY BACKUP

The Sentinel has an internal rechargeable battery backup pack (part #BAT-0032) which will provide up to 8 hours of backup time in the event of a power failure. The unit will charge the battery and monitor its charge level. The percent charge can be viewed on the website. The Sentinel contains circuitry to protect the battery from deep discharge damage and will disconnect the battery when all of its available energy has been expended. The battery backup module should last 4 to 5 years.

To replace the battery pack, switch the power off, then remove the four screws on either side of the enclosure. The cover contains two switches with wires attached, carefully lift the cover off and move it out of the way without disconnecting any of the wires. Disconnect the battery connector with the red & black wires by pulling it out. Next, loosen the velcro strap and remove the battery pack. Install the new battery pack and secure the Velcro strap. Insert the battery connector into the circuit board (it doesn't matter which way you insert it). Carefully replace the cover making sure all of the leds pop through the holes, then replace the four screws.

MEMORY/CLOCK BATTERY

The Sentinel contains a CR2 lithium battery to backup certain values in SRAM memory as well as the real-time clock. This battery should last between 5-10 years depending on how much time the device is powered off. {Note: Units manufactured prior to May 2016 contain a CR2032 lithium coin cell which has an estimated life of 2 - 5 yrs}.

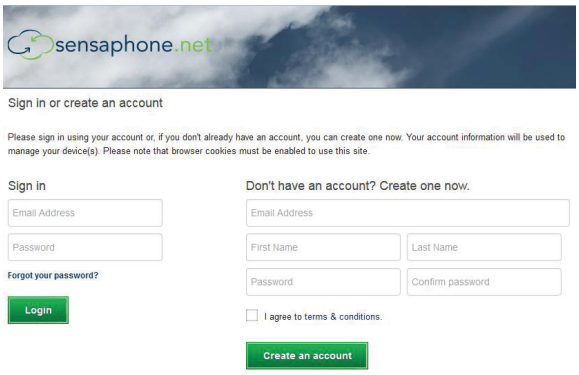
RESETTING THE SENTINEL TO FACTORY DEFAULT SETTINGS

In the event that you can no longer connect to your Sentinel, you can reset the unit to factory defaults. On the back of the unit is a small hole. Beneath the hole is a push button. Insert a paper clip or similar item into the hole and push the button for 5 seconds while the device is powered on. The Sentinel will erase all of its programming and then reboot automatically. Alternatively you can also reset the device to defaults from the Sensaphone.net website. Go to the Manage Devices page, under the Admin menu. Select the device, choose Reset to Default Values from the drop down, and click Submit.

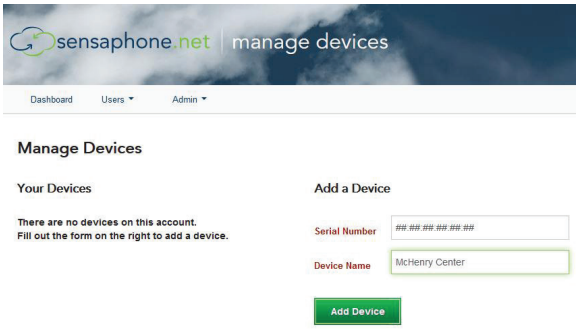
CHAPTER 2: SET UP

When your Sentinel "Online" LED is lit you can continue with the following website section.

1. Open an internet browser and go to www.sensaphone.net.
2. Fill in the form to create a new account.



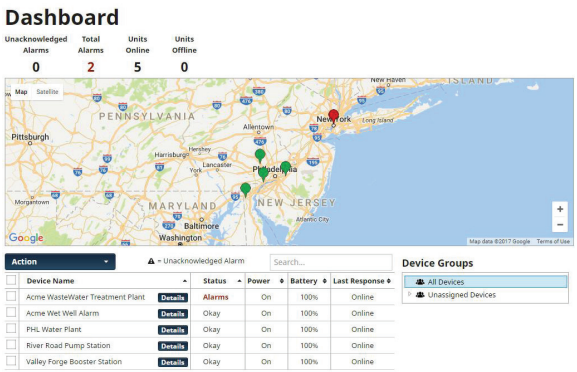
3. Once you are logged in, click *Admin*, then *Manage Devices*. In the "Add a Device" section, enter the Serial Number of your Sentinel and enter a device name. Click the *Add Device* button when finished.



Your Sentinel is now online with the Sensaphone.net website. Read the section below to learn how to view status and program your device.

DESCRIPTION OF WEB PAGES

DASHBOARD



The dashboard will list all of the devices on your account. This page is automatically updated with the most current information available.

The numbers at the top will show how many Unacknowledged Alarms, Current Alarms, Units Online, and Units Offline that currently exist for all devices on your account.

The map will show the location of any device on your account that has an address or GPS location listed. You can hover over the icon to see the device name and status. If the icon for the device is green, your device status is OK. If it is red, your device has alarms. You can click on the icon to show the zones for the selected device.

The device table will display all devices on your account. Click on the *Details* button to display and configure the zones for that device. You can also use the search box above the table to search through the table, or click on the table column headers to sort the data.

Device Name – The name of the device

Status – The current status of the device (Okay, Alarms, Offline, or Standby) If the device has any unacknowledged alarms, a symbol will be displayed in this column

Power – Displays if the device is On or Off (--- will display if the device is offline)

Battery – The current percentage of the device battery (--- will display if the device is offline)

Last Response – The time that the device last connected to the server

STANDBY MODE

Standby mode puts the Sentinel in a temporary state such that no alarms will be detected, allowing onsite personnel to perform maintenance or other tasks that may have triggered an alarm otherwise. Standby mode can be entered using the Action drop down on the Dashboard page or via the pushbutton on the front of the unit. Standby mode will persist for the duration of time entered on the Device Configure screen and will automatically exit once the time expires. When using the pushbutton you must depress the button for 5 seconds. The Standby LED will light up to indicate that the device is in Standby mode. You can also exit Standby mode using the same methods.

Standby – Allows you to put the selected devices into Standby mode

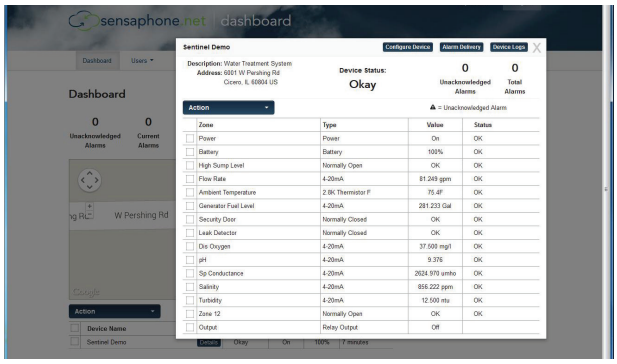
Enter – Put the Sentinel in Standby mode for the length of time that is set on the Device Configure page

Enter (Untimed) – Put the Sentinel in Standby mode until you disable it

Exit – Take the device out of Standby mode

DEVICE DETAILS

The device details page displays the sensor values for your Sentinel. This page is automatically updated with the most current information available. At the top of the page are buttons to access the *Configuration*, *Alarm Delivery* and *Logs*.



At the top of the page, you will see the device name, description, address and alarm status.

You will also see all of the zones for your device in the table.

Zone – The name of the zone

Value – The current value of the zone

Status – The current status of the zone

Min/Max – Displays the highest and lowest values recorded

If the device has any unacknowledged alarms, a symbol will be displayed in the status column

The Action dropdown menu provides options that allow you to interact with your device, such as acknowledging alarms, resetting pulse count, runtime and min/max values, and putting the device into standby mode.

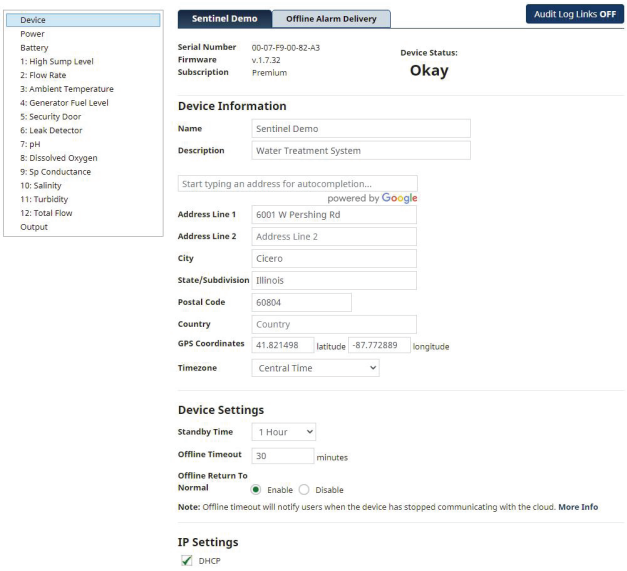
CONFIGURE DEVICE

At the top of the dashboard, click *Configure Device* to go to the device and zone programming screens.

The box on the left will display all of your configureable zones, as well as Device (for general device settings), Power, Battery and Relay Output. As you select an option, the form on the right will change to display the appropriate data. Complete the address so that the Sentinel icon will be displayed at the appropriate location on the dashboard map. The gps coordinates will be automatically computed based on the address you enter after you click Save. If the computed coordinates are off you can override them by entering your own. To have the coordinates recompute based on the address you must delete them, then click Save again.

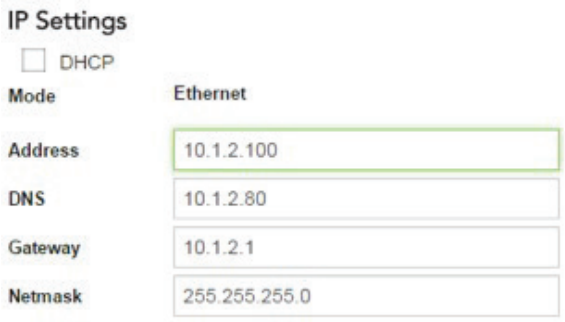
This page also contains settings for the *Device Offline* alarm and for *Standby Mode*. The *Device Offline* alarm will notify you if your devices stop communicating with the sensaphone.net servers for the programmed time duration. You can also receive a notification when the device comes back online by enabling the "Offline Return-To-Normal" option. You can create a custom list of people to be notified specifically for offline alarms by selecting the "Offline Alarm Delivery tab" at the top of this section and choosing Custom Alarm Delivery.

Once you have completed your programming, click on the *Save Settings* button at the bottom of the page.



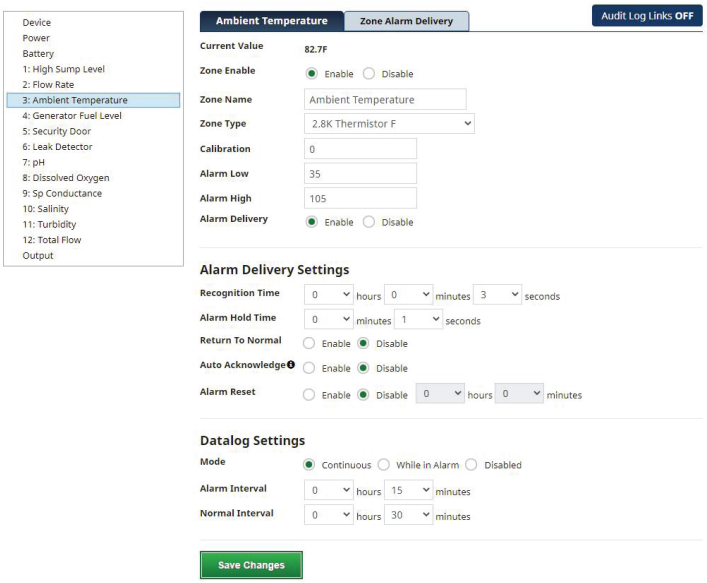
Configuring a Static IP Address

If you would like to assign your device a Static IP address, go to the Configure Device page and scroll down to the IP Settings section. Uncheck the DHCP box and the network settings will appear so that you can enter a Static IP address, Gateway, etc... Click Save to have the new settings take effect.



Zone Programming

Select the zone you would like to configure from the box from the left. A sample screen for a temperature sensor is shown below.



ZONE PARAMETER DEFINITIONS

Enable/Disable: This setting determines if the Zone is being used (Enabled) or not (Disabled). Selecting Disabled will remove the gauge from the Summary screen.

Name: Enter a name for the sensor you are monitoring which describes its purpose and/or location. The name will appear on the Device Details screen as well as on alarm messages.

Type: Choose the type of sensor you are connecting to the Zone input. For temperature sensors choose either degrees F or C.

Units: The Units field is used to describe the units of measure for the value being monitored. When Temperature is selected the Units field will automatically display F (Fahrenheit) or C (Celsius). When a 4-20mA type is selected you can enter the appropriate text for the monitored condition (e.g. %RH, PSI, GPM, RPM,…). When you select Normally Open (NO) or Normally Closed (NC) you can choose from several preset descriptions for the Open and Closed state of the input. The first word always describes the Open state of the contact and the second the Closed state. If you choose Custom you can enter your own text for the Open and Closed states. To do this simply type the words into the lower Units field and separate them with a slash (/). For example, "Slow/Fast", "Safe/Danger", "Dry/Wet".

Calibration: This field can be used to offset the Zone value either positive or negative if there is some error in the reading.

Alarm Low: This is used to determine the low level at which a temperature or 4–20mA Zone has reached the alarm threshold. The value must fall below the Alarm Limit to trip an alarm.

Alarm High: This is used to determine the high level at which a temperature or 4–20mA Zone has reached the alarm threshold. The value must exceed the Alarm Limit to trip an alarm.

Table Low: The Table Low value is used to define the lower range (4mA) of your 4-20mA sensor.

Table High: The Table High value is used to define the upper range (20mA) of your 4-20mA sensor.

Alarm Delivery Enable/Disable: When Enabled, alarm messages will be delivered, if set to Disabled alarm messages will not be delivered.

Recognition Time: This is the length of time that an alarm condition must be present before a valid alarm exists and message delivery is started.

Alarm Hold Time: When an alarm occurs, the *Alarm Hold Time* will latch the alarm condition for the programmed time period, thus preventing redundant alarms from sending additional notification messages. This is useful for alarms that are likely to trip several times within a short time period, such as motion detectors.

Return to Normal Enable/Disable: This feature instructs the Sentinel to send a message when a zone input has changed from an alarm condition back to a normal condition. Anyone who received the original alarm message will also be sent the Return-to-Normal message.

Auto Acknowledge Enable/Disable: Enabling this option will automatically acknowledge an alarm when the zone goes back to normal. As a result, all remaining alarm notifications will be cancelled.

Alarm Reset Enable/Disable: This setting enables or disables the Alarm Reset Feature. The Alarm Reset feature is used to re-send alarm messages in the event that a fault condition is not corrected in a timely fashion. If an alarm continues to exist for the duration of the programmed Reset Time (see below) the alarm will reset (reactivate) and the alarm message delivery process will begin all over again. This is an optional feature.

Alarm Reset Time: This is the time allowed for an alarm's fault condition to be corrected before the Sentinel resets (reactivates) the alarm and begins the message delivery process all over again. It is recommended that this be set to no lower than 30 minutes to prevent numerous messages from being sent.

Datalogging Mode: The Sentinel has two modes of data logging for each zone: Continuous or While In Alarm. In Continuous mode the unit will log the value of the input on a fixed time interval all the time. The Normal Interval sets the logging rate while the value is within the normal range. The Alarm Interval sets the logging rate while the value is an alarm condition. By choosing the While In Alarm mode you can choose to have the unit only log values when it exceeds the alarm limits.

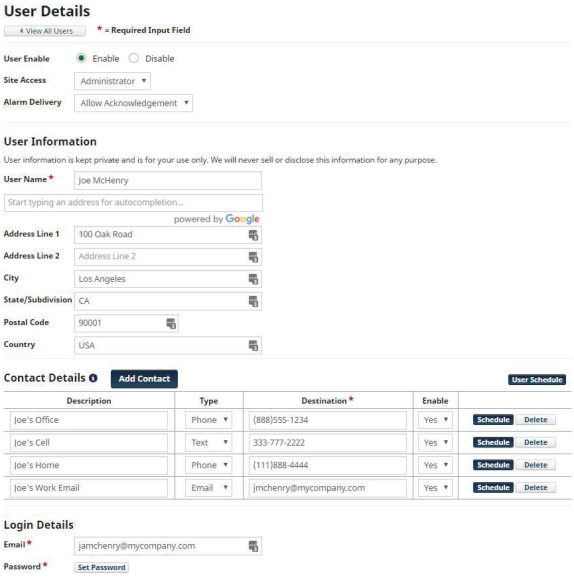
Alarm Datalog Interval: This is the interval that data will be logged while the input is beyond the programmed alarm limits. (Note: this is regardless of the programmed Alarm Recognition Time).

Normal Datalog Interval: This is the interval that data will be logged while the input is within the programmed alarm limits. To maximize the available memory for datalogging, set the Datalog Interval for each zone to multiples of each other. For example, Zone 1 can be set to 10 minutes, Zone 2 to 30 minutes, Zone 3 to 60 minutes, etc…

MANAGE USERS

The sensaphone.net website allows you to set up users that will be linked to your account. Each user can be configured to have their own login for website access and/or be contacted for alarms. In addition, you can choose to give alarm acknowledgement capability to each user.

There are several levels of permissions that can be assigned to each user. You can also enter contact information for alarm delivery purposes. From the main menu, select *Users*, then *Manage Users*. To add a new user, click on the *Add User* button. The example below shows a user setup as an administrator with four contact destinations.



The following defines the various permission levels:

Administrator – Full site access, all devices on your account

Supervisor – Gives the user access to the Dashboard, device-specific pages (for example, Device Details), Manage Users, and Manage User Groups, but for only the devices you choose for them (chosen under the Device Groups section of the form). Supervisors will have the ability to create new users, but they can only give the users Supervisor access or lower.

User – Gives the user access to the Dashboard, but only shows the devices you choose for them (chosen under the Device Groups section of the form)

None – No access to the website

Alarm Delivery – Choose whether you would like the user to be able to receive alarm notifications or not.

Disabled – No alarm delivery

Inform Only – User is notified about the alarm, but cannot acknowledge it

Allow Acknowledgement – User is notified about the alarm and is able to acknowledge it

User Information

Next, enter details about this user. The user's name is the only required information.

Contact Details

The 'Contact Details' section is where you enter the telephone numbers, text numbers, and email addresses to send alarm messages. {Note that phone calls and text messages require a Premium Ethernet or Cellular subscription. Email alarm delivery is free}. See sample programming in the figure above. To add additional contacts click "Add Contact". Be sure to add all of your possible contact methods in this section. You can choose which ones get used on the Default Alarm Delivery Schedule or Zone Alarm Delivery Schedule.

Telephone Number Programming

A '1' at the beginning of the telephone number is not required for calls to the USA, Canada, or other countries that are part of the North American Numbering Plan (NANP). See list below:

Countries in the North American Numbering Plan:

- United States
- Canada
- Caribbean Islands
    - Anguilla, Antigua & Barbuda, The Bahamas, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Dominica, The Dominican Republic, Grenada, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten, Trinidad and Tobago, Turks & Caicos
- U.S. Territories
    - American Samoa, Guam, Northern Mariana Islands, Puerto Rico, U.S. Virgin Islands*

*Technically some of these are not in North America, but since they are part of the U.S., they use the U.S. telephone system.

F**or all other countries** you have to enter an exit code first (+ or 011), then the country code, and then the number. Do not include trunk codes which are typically displayed as (0) near the beginning of the number.

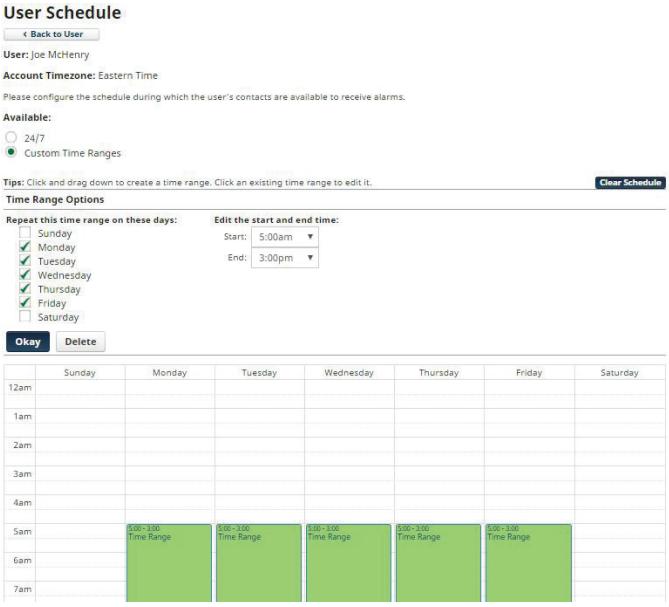
• For example, a call to the UK could be programmed as either:

+44 20 7950 4631

or

011 44 20 7950 4631

You can also create a time schedule to limit when you'll receive alarm messages. There is an overall *User Schedule* as well as individual Schedules for each contact. The default setting for all schedules is enabled, 24/7. In the sample screen below, the highlighted section shows the times when this user will be contacted for alarms:



*Note that if you configure both a User Schedule and individual Contact Schedules, there must be overlap in order for alarm messages to be delivered.

Login Details

Users will login with an email address and password. Enter this information in the *Login Details* section. In the event that a user forgets his/her password they can use the reset password feature on the main login page.

Device Access

For accounts with multiple users and/or devices, you can choose to limit a user's access to selected devices. In the *Device Access* section, choose which units this User can access. See sample screen below:

Click on 'Save Changes' once you are finished.

MANAGE USER GROUPS

Allows you to set up groups of users that can be used on other site pages.

Select the group you wish to edit from the dropdown menu, or select *Create New Group* to make a new group.

Make sure to give each group a unique, descriptive name so they can be easily referenced.

Click on the plus icon to add users to the group. A pop up modal window will show that will list all the alarm users you have added to your account from the Manage Users page (see that page description for more information).

You can select an entire user (all destinations listed under that user at the time of the alarm will be notified) or individual destinations of the user.

Click on the red X icon to remove that user from the group.

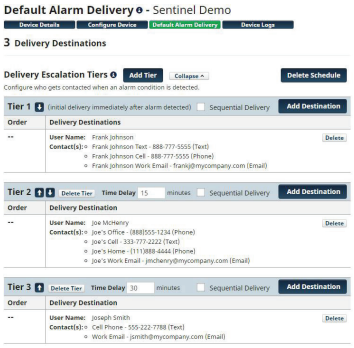
Once you are finished adding and removing users, click on the *Save Group* button at the bottom of the page.

ALARM DELIVERY

The Alarm Delivery section is where you configure the people that will be contacted when an alarm occurs. You can setup a *Default Alarm Delivery Schedule* (i.e. contact list) for each device or you can create a separate *Zone Alarm Delivery Schedule* for each individual zone. A combination of both can also be used (e.g. some zones use the default schedule and others use a custom schedule). The first step is to configure your Users and Contacts as described in the *Manage Users* section. If you haven't completed that step please do it first.

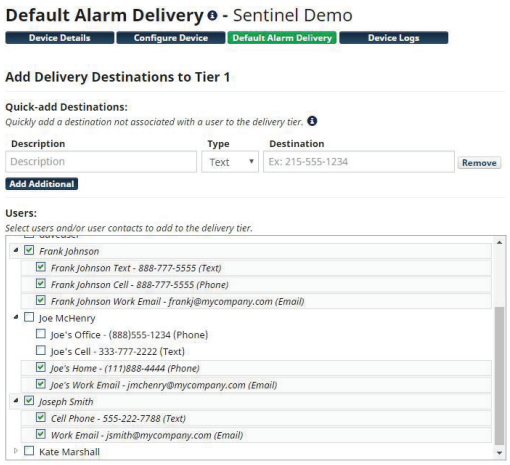
Default Alarm Delivery Schedule

To get started select a device from the Dashboard and click *Details*. Next click the *Default Alarm Delivery* button. Click the *Add Destination* button to select people from your User list. You can select all of the User contacts or just a few if desired. See sample screen below:



Continue clicking the *Add Destination* button to add additional User's to the list. If you would like to insert a delay between the first User (or group of Users) and the next User, click the *Add Tier* button and enter the delay time. Users in this Tier will not be contacted until the delay time expires. Click *Save Changes* when your schedule is complete.

*Note that the Tier Delay timer starts at the time the alarm occurs. If the alarm is acknowledged before the delay time expires then Users in the 2nd Tier (and beyond) will not receive the alarm message. See sample programming screen below:



Zone Alarm Delivery Schedule

A Zone Alarm Delivery Schedule is an alarm contact list that only applies to one specific zone. You can create a separate Zone Alarm Delivery Schedule for each individual zone if required. To configure a *Zone Alarm Delivery Schedule* select a Zone from the *Device Details* page. Then click the *Zone Alarm Delivery* tab on the right. Select *Custom* to configure a contact list for the selected zone. Follow the steps as described above to complete the schedule.

Quick-Add Destinations

Quick-Add Destinations are those that can be easily entered to the notification list without creating a User Account. Note, however, that destinations added here will be inform-only (e.g. **cannot acknowledge alarms**). This entry method is useful for sending messages to people who do not require a user account in the system but may want to be informed when a particular alarm occurs.

Alarm Acknowledgment

Alarms can be acknowledged from the dashboard page by selecting a device using the checkboxes next to each device, and then clicking the "Action" drop-down at the top of the screen. You can acknowledge both Device Offline alarms or Zone alarms. Devices with 'Unacknowledged' alarms are identified with an exclamation point within a triangle. Once the alarm is acknowledged this symbol will disappear. You can acknowledge multiple alarms on multiple devices at the same time. Alarms can also be acknowledged during telephone calls by entering 555 when prompted, or by clicking the web link contained in email and text messages

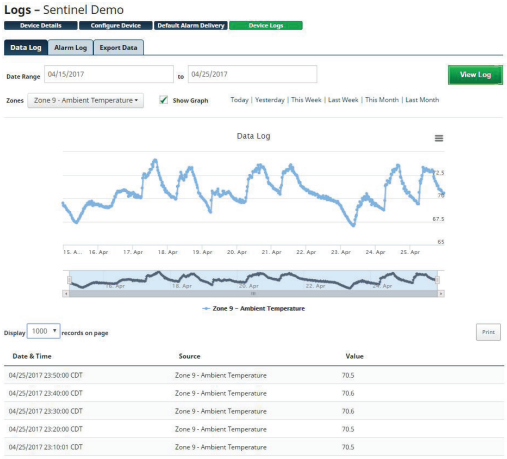
LOGS

The Sentinel includes an Alarm Log and Data Log. The Alarm Log lists all alarm activity for the selected device. You can narrow down the messages by individual zones or you can select multiple zones. The Data Log contains the recorded values for each zone based on the parameters you set up on the Zone Configuration screens. You can display the values on the screen as well as graph them. There is also an option to Save the data to a file. To get to the Device Logs section, click the *Details* button from the Dashboard for the device you would like to view, then click the *Device Logs* button.

Alarm Log – Shows the history of all alarm notifications that were sent for the device

Data Log – Show the history of all logged zone values and statuses for the device

Export Data - Allows you to save selected Alarm Log or Data Log records in either CSV or pdf format. Note that CSV formatted files can be opened in Microsoft Excel.



Note that for Normally Open and Normally Closed zone types, the Sentinel will record a "0" when the input is presented with an open circuit and a "1" when the input has a closed circuit. Depending on your sensor and programming, this may represent either a normal or alarm condition.

DEVICE MANAGEMENT

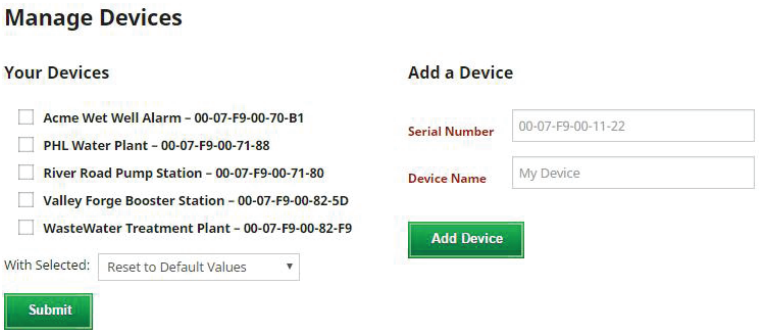
You can add, modify, and remove Sentinel devices from your account on the Manage Devices screen. From the main menu select Admin, then Manage Devices. Listed below are the device-related actions that can be done.

Adding Devices - To add a new device to your account, enter the device serial number (located on the bottom of the unit in the format 00:07:F9:00:00:00) and give the device a name, then click *Add Device*.

Reboot Device - To reboot your device, select it from the list to the left and then choose Reboot Device from the drop down box at the bottom of the page, then click Submit. Your Sentinel will reboot and then reconnect within a few minutes. Your Sentinelgramming will remain intact.

Remove From Account - To remove a device from your account, select it from the list to the left and then choose Remove from Account from the drop-down box at the bottom of the page. Then click *Submit.*

Reset to Default Values - To reset a device to default settings, select it from the list to the left and then choose *Reset to Default Values* from the drop-down box at the bottom of the page. Then click *Submit.* Allow several minutes for your device to complete the reset process.



DEVICE GROUPS

In cases where you have many devices and many users it may be desirable to create Device Groups. These can make it easier to assign device permissions to specified Users. From the main menu select Admin, then Device Groups. In the main window, you will see a list of all your devices and any groups you may have already created. Devices are shown with a green device icon and groups are shown with a black icon. You can have multiple groups, and you can even have groups within a group. If a device icon is lined up on the left-most side of the window, they are not in a group.

To add a new group, click on the Add Group button at the top of the page. A 'New Group' icon will appear in the list. You can rename the group by right clicking on it and selecting Rename. To move a device into a group, click on the device and drag it into the group. Continue adding devices until you're finished, then click Save Groups.

The blue number shown on the group icon shows how many devices are within that group. To remove a group, right click on the group and select Delete. Any devices in that group will be moved up one level. For example, if a group that had two devices was deleted, the two devices would be shifted to the left and would no longer be in any group. You can also click and drag a device or group to reorder them. To search through your devices click on Filters. You can choose to hide any device or group that does not match your search, and you can choose to only search through your devices and not your groups. Once you are finished editing your groups, click on the Save Groups button at the bottom of the page.

ACCOUNT SETTINGS

The Account settings page is used to configure a number of options that apply across the board to your account. This page is only available to users with 'Admin' site access level. To access the account page select 'Admin' from the main menu, then 'Account'.

NAME: Give your account a 'Name' that best describes the organization managing your devices.

TIME ZONE: Set the 'Time Zone', which will serve as the default for all of your users. This will be important to ensure that any schedules you configure will operate at the appropriate times.

There are several 'Account Features' that you can configure to have the system operate in a certain manner.

REQUIRE SITE USER: When Admins and Supervisors are configuring Users, you can force the system to require that all User's receive website access by checking the 'Require Site User' box.

REQUIRE ALARM USER: Similarly, you can also require all Users to have the ability to receive alarm notifications by checking the 'Require Alarm User' box.

USER GROUPS: You can choose whether or not to allow 'User Groups' to be created within the system. Check the 'User Groups' check box to permit user groups to be used within the system.

HIDE DISABLED ALARMS: On the device details page you choose to hide the alarm status of a zone if 'Alarm Delivery' is set to disabled for the selected zone. This can be convenient when a zone is beyond the alarm limits for maintenance reasons and you don't want to display the status as 'Alarm'.

CSV Email: Enabling this setting exposes an option on the User pages to use the CSV email message format used by some state department of environmental protection agencies (such as the MASS DEP). Note that enabling this option will expose a similar setting on the User pages so that you can create a specific user with a specific email address to receive the specially formatted message.

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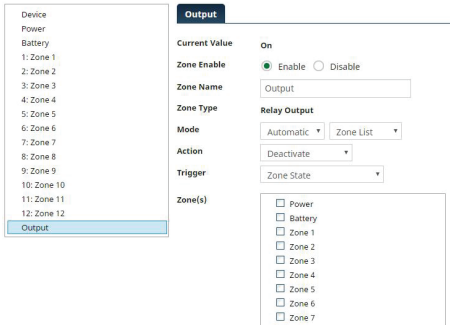
CHAPTER 3: CONFIGURING THE RELAY OUTPUT

The Sentinel includes a relay output that can be used to control a light, siren, or other low voltage device. The output can be configured to switch either manually or automatically when a zone changes state or exceeds the alarm limits. To program the output click *Output* from the *Device Details* or *Configure Device* screen. The following configuration page will appear:



Enter a Name so that you'll know what the Output will be controlling. The Output can operate in Manual mode or Automatic mode. In manual mode you can turn the relay ON or OFF through the web page or the mobile App. To manually switch the relay output, click in the State field and select either ON or OFF, then click *Save Changes*. The change request will be sent to the Sentinel and the *Current Value* will update after the output change has successfully completed.

In Automatic mode the relay can be programmed to turn-on automatically when certain conditions are met. Listed below is a description of the parameters that apply to the automatic modes.

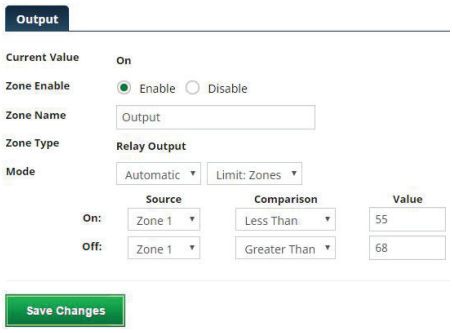
Input Selection - Next to the Automatic mode selection box is another drop-down that allows you to select which zones will control the output. There are four options (Zone List, Type List, All Inputs, and Limit: Zones).

Zone List: This option allows you to individually select which zones will cause the output to switch. Check the boxes next to the desired zones.

Type List: This option allows you select zones based on the zone Type. For example, you could have all of the zones configured for Temperature control the output.

All Inputs: This option selects all of the inputs (zones).

Limit: Zones: This option allows you to independently control the output based on the value of one or two zones using greater-than, less-than, or equal-to comparison statements. A separate Output-On and Output-Off instruction can be configured with its own comparison value. See sample below:



Action - This setting determines what the Output will do when the selected zone (or zones) exceeds the alarm limits. You can have the relay Activate (turn-on), Deactivate (turn-off), or Cycle (ON under normal conditions, momentarily OFF for 10 seconds when an alarm condition occurs, then back ON).

Trigger - The trigger determines what will cause the output to change state. There are 3 options to choose from which are described below:

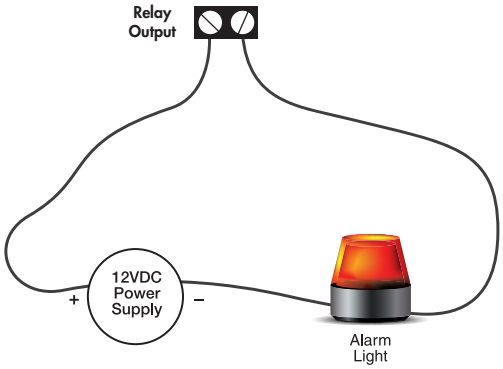
Unacknowledged Alarms: Choosing this option will make the Output change to the setting defined by the Action for as long as an Unacknowledged Alarm persists on the selected zones. Once the alarm is acknowledged the Output will revert back to its normal position.

Alarm Condition: Choosing this option will make the Output change to the setting defined by the *Action* for as long as the selected input(s) remain in Alarm, regardless of acknowledgement. Once the selected zones return to their normal state the Output will revert back to its normal position.

Zone State: Choosing this option will make the output change to the setting defined by the *Action* as soon as the selected zones exceed the alarm limits. In other words, the alarm recognition time is not enforced, and the Output will change instantly. Once the selected zones return to their normal state the Output will revert back to its normal position.

Relay Output Wiring

The relay output can be used to turn on a light, siren, or other low voltage device. The relay is rated for up to 30VAC/VDC 1 Amp. A sample wiring diagram is shown below:



APPENDIX A: WEEKLY TESTING PROCEDURE

We recommend that you test your Sensaphone weekly to be sure it is functioning properly. This will ensure that when a problem arises the Sensaphone will be ready to alert the appropriate personnel.

There are several tests that can be performed:

1.) Create an alarm on each zone by tripping all connected sensors.

Temperature sensors: Heat or cool the sensor.

Motion sensors: Have someone walk in front of the sensor.

Door/window sensors: open the door/window.

Water sensors: Apply a small amount of water beneath the sensor or use a wet towel and touch it to the sensor probes.

Humidity sensors: Raise the humidity around the sensor by holding a cup of very hot water beneath the sensor.

2.) Allow the unit to contact all programmed users. This will make sure that the Sensaphone is programmed properly. It will also prepare personnel to respond appropriately when they receive a message from the Sensaphone.

3.) Test the battery (if installed) by unplugging the AC adapter and making sure that the Sensaphone continues to function. Keep the AC adapter unplugged so that a Power Failure alarm occurs. Plug in the AC adapter after the unit has finished.

4.) Keep a log of your tests, noting the date and whether the Sentinel passed in each category tested. An example of such a log is shown below. (See "Test Log" at the end of this manual.)

WEB600 Test Log

Date	Inputs		Alarm		Battery		
	Pass	Fail	Pass	Fail	Pass	Fail	
07/19/09	☒	☐	☒	☐	☒	☐	Bob H
08/20/09	☒	☐	☒	☐	☒	☐	Alex G.
09/19/09	☒	☐	☒	☐	☒	☐	Bob H.
	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	

If you require assistance, call Sensaphone Technical Support at 610-558-2700.

APPENDIX B: ACCESSORIES

The sensors listed below are available from Sensaphone, and represent the most commonly used zone devices. Other dry contact sensors, designed for more specialized applications, may also be used. Commercial or industrial electrical supply houses can provide devices to monitor virtually any condition. For further information, contact Sensaphone Customer Service at 610-558-2700.

Part #	Description	Part #	Sensor/Switch
BAT-0032	Sentinel Battery	FGD-0100	2.8k Remote Temperature Sensor
FGD-0006	Magnetic Reed Switch	FGD-0101	2.8k Weatherproof Temperature Probe
FGD-0007	Passive Infra-Red Detector	FGD-0102	10k Weatherproof Temperature Probe
FGD-0010	50' two-conductor #22AWG shielded Cable	FGD-0103	10k Indoor Decorator
FGD-0013	Spot Water Detector	FGD-0104	10k Outdoor Air Weatherproof
FGD-0022	Temp° Alert	FGD-0205	Multi-Point Wireless I/O System
FGD-0027	Humidistat	FGD-0301	Pressure Sensor
FGD-0049	Smoke Detector with Built-in Relay	FGD-0303	Vibration Sensor
FGD-0052	Humidity 4-20mA Transmitter		
FGD-0053	24VDC Power Supply		
FGD-0054	Power-Out Alert		
FGD-0056	Zone Water Detector w/Water Rope		
FGD-0063	Additional 10' Water Rope for FGD-0056		
FGD-0065	Carbon Monoxide Sensor		
FGD-0066	Air Quality Sensor		
FGD-0067	Surge Suppressor		
FGD-0070	Power supply with battery backup		

APPENDIX C: SPECIFICATIONS

ALERT ZONES

Number of Zones: 12

Zone Connector: terminal block

Zone Types: N.O./N.C. contact, 2.8K Thermistor (-109° to 115°F, -85° to 57°C) And 10K Thermistor (-87° to 168°F; -66° to 76°C), and 4-20mA (-80,000.0 to 80,000.0

Zone Characteristics: 28.7KΩ to 3.3V (temperature/contact) or 250 Ohms to ground (4-20mA)

A/D Converter Resolution: 12 bits ±2 LSB

Zone Protection: 5.5VDC Metal Oxide Varistor with fast acting diode clamps.

Pulse Counting: 1ms minimum duration, 1 pulse-per-second maximum rate

RELAY OUTPUT

Rated for 1A 30VAC/ 1A 30VDC Maximum

DATA LOGGING

1 minute to 24 hour sampling rate

User programmable channel selection

Zones 1 – 12

Battery

Input Power

LED INDICATORS

Power: On steady when the unit is powered on.

Alarm: Off when no alarm exists.

Ethernet Link and Activity LEDs

Online

Standby

COMMUNICATION TYPE:

10/100 BASE-T Ethernet with SSL encryption

POWER SUPPLY

Power Supply: 120VAC/12VDC 50/60Hz 6W wall plug-in transformer w/6’ cord.

Power Consumption: 2 Watts

Power Protection: Metal Oxide Varistor

BATTERY BACKUP

Rechargeable Battery: Internal 8 Hr NiMH Battery Pack (Part # BAT-0032).

Memory/Clock Battery: Internal 5-10 yr CR2 lithium (Part # BAT-0033).

ENVIRONMENTAL

Operating Temperature: 32–122° F (0–50° C)

Operating Humidity: 0–90% RH non-condensing

Storage Temperature: 32°–140° F (0–60° C)

PHYSICAL

SCD-1200

Enclosure: Powder-coated aluminum enclosure with tabs for wall or panel mounting

Physical Dimensions: 5.5" x 6.3" x 1.5" (140 mm x 160 mm x 38 mm)

Weight: 1 lb. (0.45 kg)

SCD-1200-CD, -SD (Weatherproof)

Enclosure: High impact polycarbonate, UL Type 4X/6P (IP66/68)

Physical Dimensions: 12.17" x 10.25" x 3.5" (309 x 260 x 89 mm)

Weight: 3.7 lb. (1.67 kg)

SCD-1200-4Gxxxx (Weatherproof w/Cellular Modem)

Enclosure: High impact polycarbonate, UL Type 4X (IP66)

Physical Dimensions: 12.0" x 13.7" x 7.4" (305 mm x 348 mm x 188 mm)

Weight: 14 lb. (6.35 kg)

APPENDIX D: THERMISTORS

2.8K THERMISTOR DATA

Degrees Celsius	Resistance (Ohms)
-50	187,625
-40	94,206
-30	49,549
-20	27,180
-10	15,491
0	9,142
10	5,572
20	3,498
30	2,256
40	1,491
50	1,009
60	697
70	490
80	351

10K THERMISTOR DATA

Degrees Celsius	Resistance (Ohms)
-50	441.3K
-40	239.8K
-30	135.2K
-20	78.91K
-10	47.54K
0	29.49K
10	18.79K
20	12.25K
30	8,194K
40	5,592
50	3,893
60	2,760
70	1,990
80	1,458
90	1,084
100	816.8
120	481.8
130	376.4
140	297.2
150	237.0

APPENDIX E: POST & CONNECTION ERROR CODES

When the device boots up it runs a Power On Self Test (e.g. POST). During this process the Online LED will go through a series of blink patterns. This can take a few minutes while it tests various functions and connects to the Sensaphone.net servers. If a problem occurs, the Online LED will blink a repetitive pattern of 'x' blinks followed by a 5 second pause. The table below defines the possible errors based on the number led of blinks.

Online LED Blink Codes	Failure indication	Description	Corrective Action?
OFF	Idle	Unit does not have a secure connection to the server, nor attempting to establish a secure connection	"Unit is initializing, either on power-up or rebooting. Most of the initial boot time is spent initializing memory, which can take a few minutes. * If the power LED is also OFF, the unit may have its power cable disconnected and its internal battery is depleted. * A less likely possibility is the online LED is disconnected or faulty."
flickering	Negotiating	Unit is negotiating a secure connection	The online LED flickering or blinking irregularly is normal when the unit is negotiating the secure connection. In contrast, the error code blinks steadily, then has a 5 second OFF period between error blinks.
ON	Connected	Unit has established a secure connection with the server	Secure connection with the server is established – OK!
1	Operating system initialization in progress	The unit's operating system's I/O is initializing	There is a fault in the firmware if this error code persists.
2	Real-time clock initialization failed	Internal clock not functioning	Possibly a hardware fault with the processor's internal RAM or RTC oscillator failure
3	Ethernet device initiailzation failed	Failed to configure ethernet chip	Probably a hardware fault.
4	Ethernet cable failed	Ethernet cable appears to be disconnected during boot	The Ethernet cable may be disconnected or otherwise faulty
5	DHCP failed	Unable to bind IP address	If using static IP, there may be an error in the IP, DNS, gateway or netmask. If using DHCP, problem may be with DHCP server.
6	Secure negotiation in progress	The unit's operating system's I/O has finished initializing, will now proceed with the secure connection negotiation	"There is a fault in program execution if this error code occurs, perhaps the memory has been corrupted. * A less likely possibility is the processor's internal RAM is faulty."
7	DNS link failed	DNS link failed	"DNS address may be incorrect, or perhaps the DNS server is down. Also check the Ethernet cable: if disconnected while securely connected to the server, reconnection attempts while the cable is disconnected will fail here."
8	IP address failed	IP address could not be resolved	If using static IP, the IP address may be incorrect
9	TCP socket failed	TCP socket to the secure server failed to connect	Port 443 may be blocked. Or perhaps the remote server is unavailable – this is the first attempt at connecting with the remote server. Will attempt to reconnect to another server.
10	SSL connect failed	SSL connection to the secure server failed to connect	Server may have SSL disabled?
11	SSL handshake failed	SSL handshake failed	If this keeps happening, the problem may be the server has changed its SSL certificate.

12	Server dropped the connection	The server dropped the established secure connection for some reason	Probably a glitch. Unit will reestablish the secure connection in a minute. (This is the catch-all error code for the server dropping the connection – there are many possible reasons).
13	SSL invalid MAC	The server dropped the established secure connection due to an invalid MAC	Probably a glitch, unit will reestablish the secure connection in a minute.
14	TCP read error	The server dropped the established secure connection due to a read error	Probably a glitch. Unit will reestablish the secure connection in a minute. If this keeps occurring, the server may be restarting/rebooting and may take about 8 minutes to reconnect.
15	Ethernet cable disconnected	The Ethernet cable disconnected or failed while the secure connection was established	Reconnect or replace the Ethernet cable
16	Reserved		
17	TCP write error	The unit had a problem transmitting over Ethernet	Probably a glitch. Unit will reestablish the secure connection in a minute. If this keeps occurring, there may be a problem with the real-time clock getting stuck - check if the lithium battery is below 30% (2.3V; nominal voltage is 3.0V).
18	TCP socket closed	The TCP socket between the unit and the server is unexpectedly closed.	Unit will reboot if this error occurs 6 times, which may clear the problem. Manual reboot would be the equivalent.
19	HTTP JSON parse error	The JSON message from the server is garbled or not present	Corrupt data communication. If a cellular or satellite connection, check for weak signal

APPENDIX F: RETURNING THE UNIT FOR REPAIR

In the event that the Sentinel does not function properly, we suggest that you do the following:

1) Record your observations regarding the Sentinel's malfunction.

2) Call the Technical Service Department at 610-558-2700 prior to sending the unit to Sensaphone for repair.

If the unit must be sent to Sensaphone for Servicing, please do the following:

1) Unplug the AC power supply from the wall outlet and disconnect all sensors from the alert zones.

2) Carefully pack the unit to avoid damage in transit. Use the original container (if available) or a sturdy shipping box.

3) You must include the following information to avoid shipping delays:

    a) Your name, address and telephone number.

    b) A note explaining the problem.

4) Ship your package to the address below:

SERVICE DEPARTMENT

SENSAPHONE

901 Tryens Road

Aston, PA 19014

5) Ship prepaid and insured via UPS or US Mail to ensure a traceable shipment with recourse for damage or replacement.

APPENDIX G: TEST LOG

Date	Inputs		Alarms		Battery						Tested By
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
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Date	Inputs		Alarms		Battery						Tested By
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
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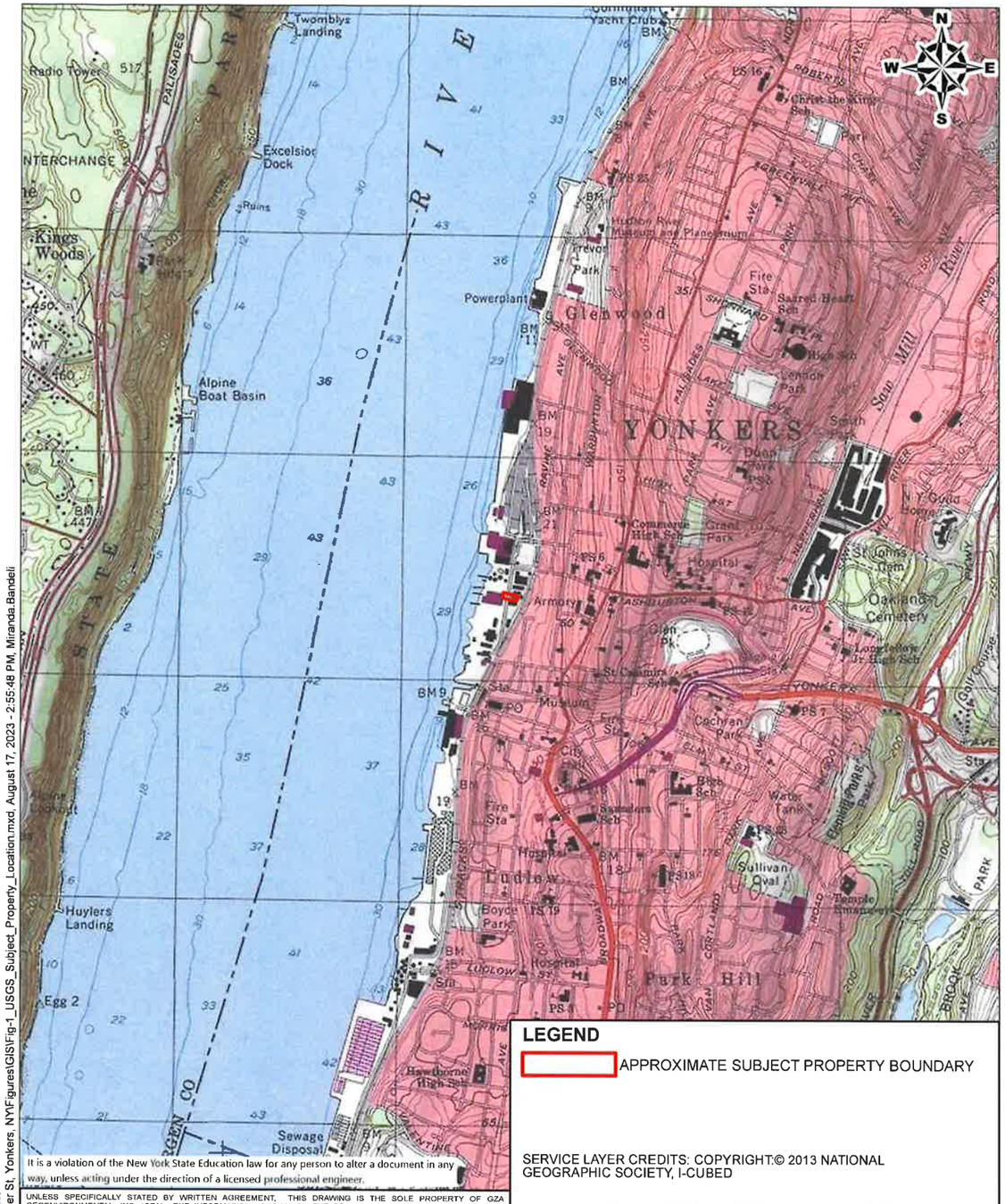
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	

Appendix C – As-Built Drawings



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LEGEND

APPROXIMATE SUBJECT PROPERTY BOUNDARY

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0 1,000 2,000 4,000

SCALE IN FEET

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72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

PREPARED BY:
GZA GeoEnvironmental, Inc.
www.gza.com

PREPARED FOR:
MURES ALEXANDER LLC
214 STARR ST.
YONKERS, NY 11237

SUBJECT PROPERTY LOCATION MAP

PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: DW	FIGURE
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1 " = 2,000 FEET	1
DATE: 08/17/2023	PROJECT NO: 12.0077558.00	REVISION NO:	

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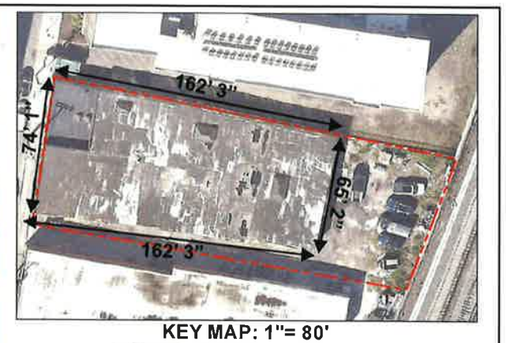

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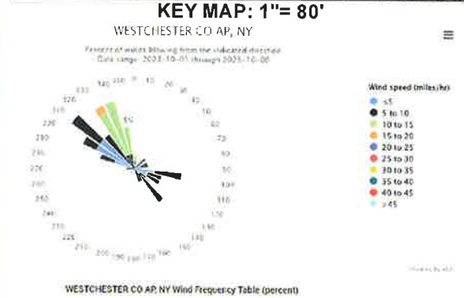

WESTCHESTER CO AP, NY Wind Frequency Table (percent)

LEGEND

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- POTENTIAL RECEPTOR PROPERTY BOUNDARY
- POTENTIAL RECPTOR PROPERTY BOUNDARY REGARDLESS OF WIND DIRECTION
- APPROXIMATE EMMISION POINT LOCATION
- PREVAILING WIND ARROW

NOTES:
1. SEE ENGINEERING REPORT SECTION 5.2 - WIND DIRECTIONS FOR RECEPTORS AND RECEPTORS DISTANCES FROM EMISSION POINTS 01 - 05.
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SCALE IN FEET

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72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE PLAN VIEW

ENGINEERING SEAL
106372
STATE OF NEW YORK
ROBERT L. JACKSON
LICENSED PROFESSIONAL ENGINEER

PREPARED BY:		PREPARED FOR:
GZA GeoEnvironmental, Inc. www.gza.com		MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: DW
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1 " = 100 FEET
DATE: 12/11/2023	PROJECT NO: 12.0077558.00	REVISION NO:

FIGURE **2A** SHEET NO: 01 OF 02

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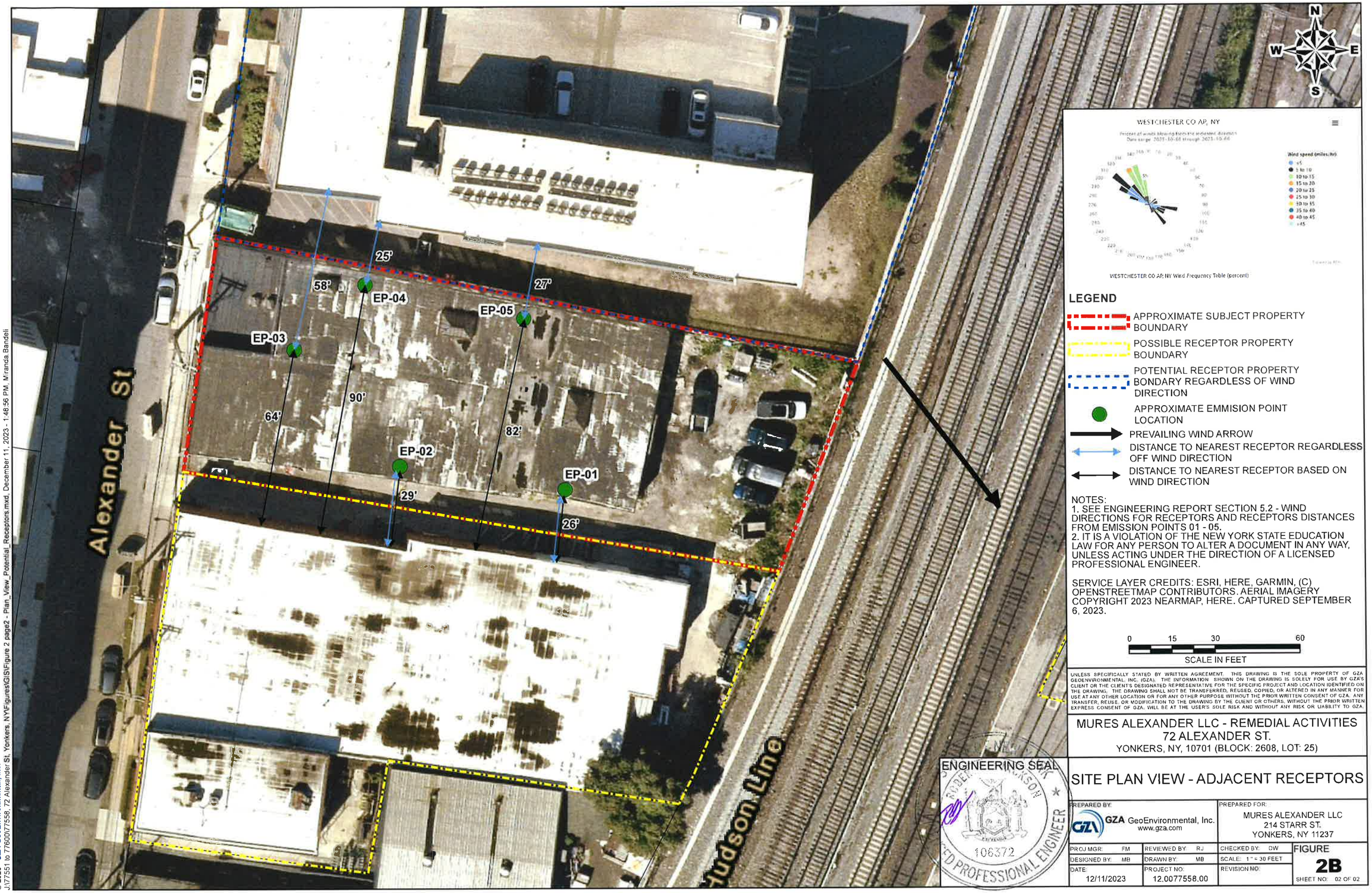

WESTCHESTER CO AP, NY Wind Frequency Table (percent)

LEGEND

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- POSSIBLE RECEPTOR PROPERTY BOUNDARY
- POTENTIAL RECEPTOR PROPERTY BONDARY REGARDLESS OF WIND DIRECTION
- APPROXIMATE EMMISION POINT LOCATION
- PREVAILING WIND ARROW
- DISTANCE TO NEAREST RECEPTOR REGARDLESS OFF WIND DIRECTION
- DISTANCE TO NEAREST RECEPTOR BASED ON WIND DIRECTION

NOTES:
1. SEE ENGINEERING REPORT SECTION 5.2 - WIND DIRECTIONS FOR RECEPTORS AND RECEPTORS DISTANCES FROM EMISSION POINTS 01 - 05.
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0 15 30 60
SCALE IN FEET

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72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

ENGINEERING SEAL
ROBERT J. PARKSON
106372
LICENSED PROFESSIONAL ENGINEER

SITE PLAN VIEW - ADJACENT RECEPTORS

PREPARED BY: GZA GeoEnvironmental, Inc. www.gza.com			PREPARED FOR: MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: DW	FIGURE 2B
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1" = 30 FEET	
DATE: 12/11/2023	PROJECT NO: 12.0077558.00	REVISION NO:	SHEET NO: 02 OF 02

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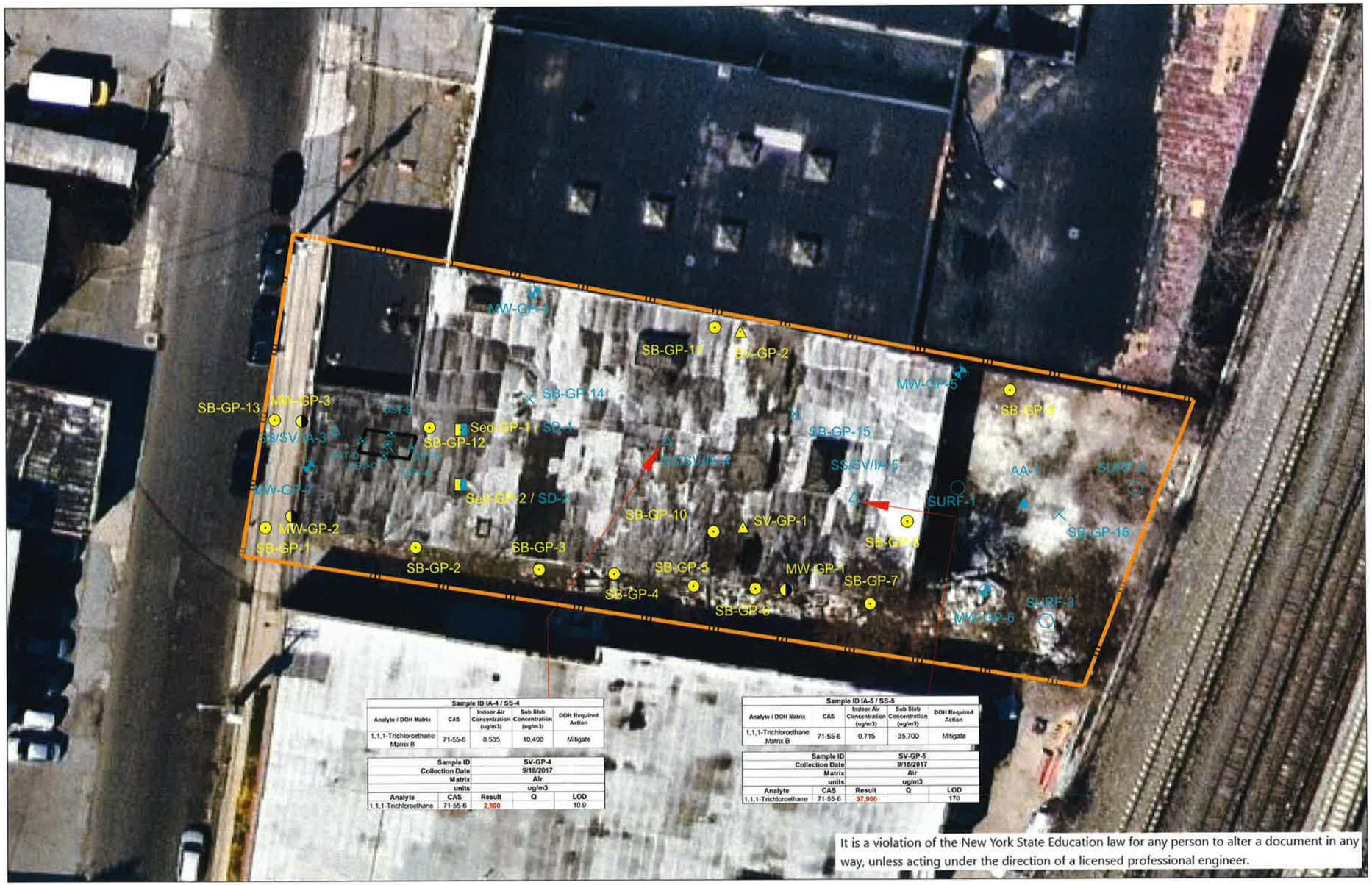
J:\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\Figure 2 page2 - Plan_View_Potential_Receptors.mxd, December 11, 2023 - 1:48:56 PM, Miranda.Bandeli

NORTH



Sample ID IA-4 / SS-4				
Analyte / DOH Matrix	CAS	Indoor Air Concentration (ug/m3)	Sub Slab Concentration (ug/m3)	DOH Required Action
1,1,1-Trichloroethane Matrix B	71-55-6	0.535	10,400	Mitigate

Sample ID		SV-GP-4		
Collection Date		9/18/2017		
Matrix		Air		
units		ug/m3		
Analyte	CAS	Result	Q	LOD
1,1,1-Trichloroethane	71-55-6	2,900		10.9

Sample ID IA-5 / SS-5				
Analyte / DOH Matrix	CAS	Indoor Air Concentration (ug/m3)	Sub Slab Concentration (ug/m3)	DOH Required Action
1,1,1-Trichloroethane Matrix B	71-55-6	0.715	35,700	Mitigate

Sample ID		SV-GP-5		
Collection Date		9/18/2017		
Matrix		Air		
units		ug/m3		
Analyte	CAS	Result	Q	LOD
1,1,1-Trichloroethane	71-55-6	37,900		170

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Disclaimer: Figure prepared by PS&S, not GZA or Equity. This figure is being used for informational purposes only, not as a statement of investigative findings performed by GZA. Any transfer, reuse, or modification to the drawing by the client or others, without the prior written express consent of GZA, will be at the user's sole risk and without any risk or liability to GZA.

NOTES:
1. AERIAL IMAGERY SHOWN WAS OBTAINED FROM BING MAPS DATED MARCH 26, 2016
2. 2017 SAMPLE DATA FROM SEPTEMBER 2017 REMEDIAL INVESTIGATION (PS&S)

REV. / ISSUE	DATE	DESCRIPTION

LEGEND

- Property Boundary
- 2011 Monitoring well Location
- 2011 Soil vapor Investigation Location
- 2011 Soil Boring Location
- 2011/2017 Sewer Debris Sample Location
- 2017 Soil Boring Location
- Combined Soil Vapor, Sub Slab and Indoor Air Sample Location
- 2017 Temporary Well Point and Soil Boring Location
- Ambient Air Sample Location
- 2017 Surface Soil Sample Location
- 2017 Post-Excavation Soil Sample Location
- Approximate UST Location

ORIENTATION / KEY PLAN

CLIENT

FONDAK ENTERPRISES, LLC

PAULUS, SOKOLOWSKI AND SARTOR, LLC
67A MOUNTAIN BLVD EXT.
P.O. BOX 4039
WARREN, NJ 07059
PHONE: (732) 560-9700
CERTIFICATE OF AUTHORIZATION NO. 24GA28027700

PROJECT

72 ALEXANDER STREET
FONDAK ENTERPRISES, LLC

CITY OF YONKERS
WESTCHESTER COUNTY, NEW YORK

SHEET TITLE

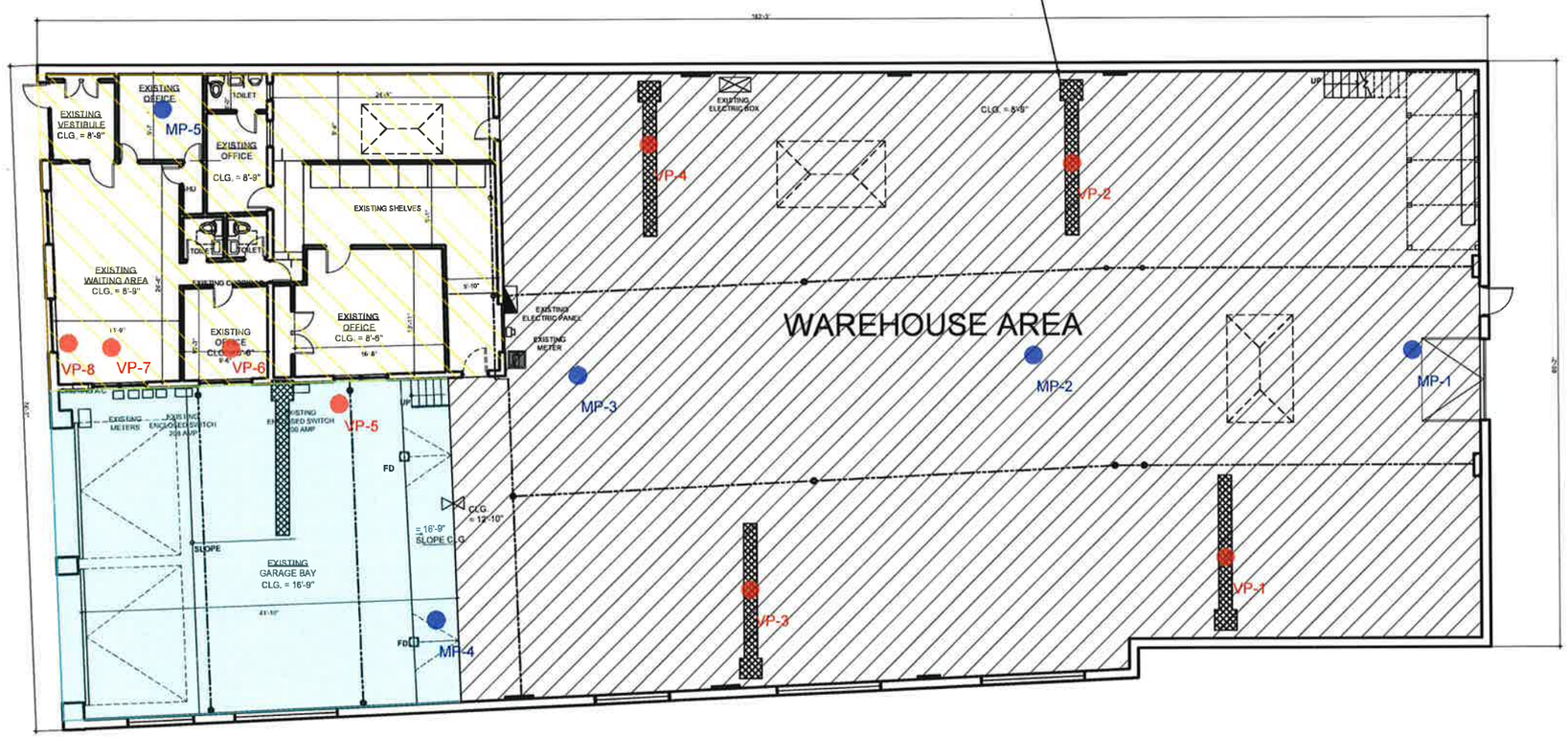
2017 SOIL VAPOR NYSDOH RECOMMENDED ACTIONS

PROJECT NO.: 05784-0001		DRAWN BY:	ES
SCALE:	1" = 30'	CHECKED BY:	EC
DATE:	1/18/2018	SHEET	OF
SHEET NO.			

FIGURE 3

SSDS TRENCH

NOT DRAWN TO SCALE



LEGEND

- MONITORING POINT
- VAPOR POINT
- RETRO-COAT SYSTEM (OFFICE/SHELF AREA)
- GARAGE BAY AREA
- 3" TO 5" CONCRETE

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PREPARED BY:

Equity Environmental Engineering LLC
A Division of GZA

500 INTERNATIONAL DRIVE, SUITE 150
MOUNT OLIVE, NJ 07828

PHONE: (973) 774-3300
EMAIL: ROBERT.JACKSON@GZA.COM
WEB: WWW.GZA.COM

CLIENT: MURES ALEXANDER LLC.

ATTN: IOAN SITA
EMAIL: IOAN.SITA@STARRWIN.COM

STATEMENT:
IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER/ARCHITECT, TO ALTER IN ANY WAY, ANY ITEM ON THESE DRAWINGS. IF AN ITEM BEARING THE SEAL OF AN ENGINEER/ARCHITECT IS ALTERED, THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX TO THIS ITEM THEIR SEAL AND THE NOTATION "ALTERED BY", FOLLOWED BY HIS/HER SIGNATURE AND THE DATE OF SUCH ALTERATION, ALONG WITH A SPECIFIC DESCRIPTION OF THE ALTERATION ON THE DRAWING.

NO.	DATE	DESCRIPTION

PROJECT:
SSDS LAYOUT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

DESIGN BY:	RJ	04/24/2023
DRAWN BY:	JV	04/24/2023
CHECKED BY:	RJ	04/24/2023
FINAL CK BY:	RJ	02/05/2024

PROJECT NO.: 12.0077558.00

PAGE 1 OF 1

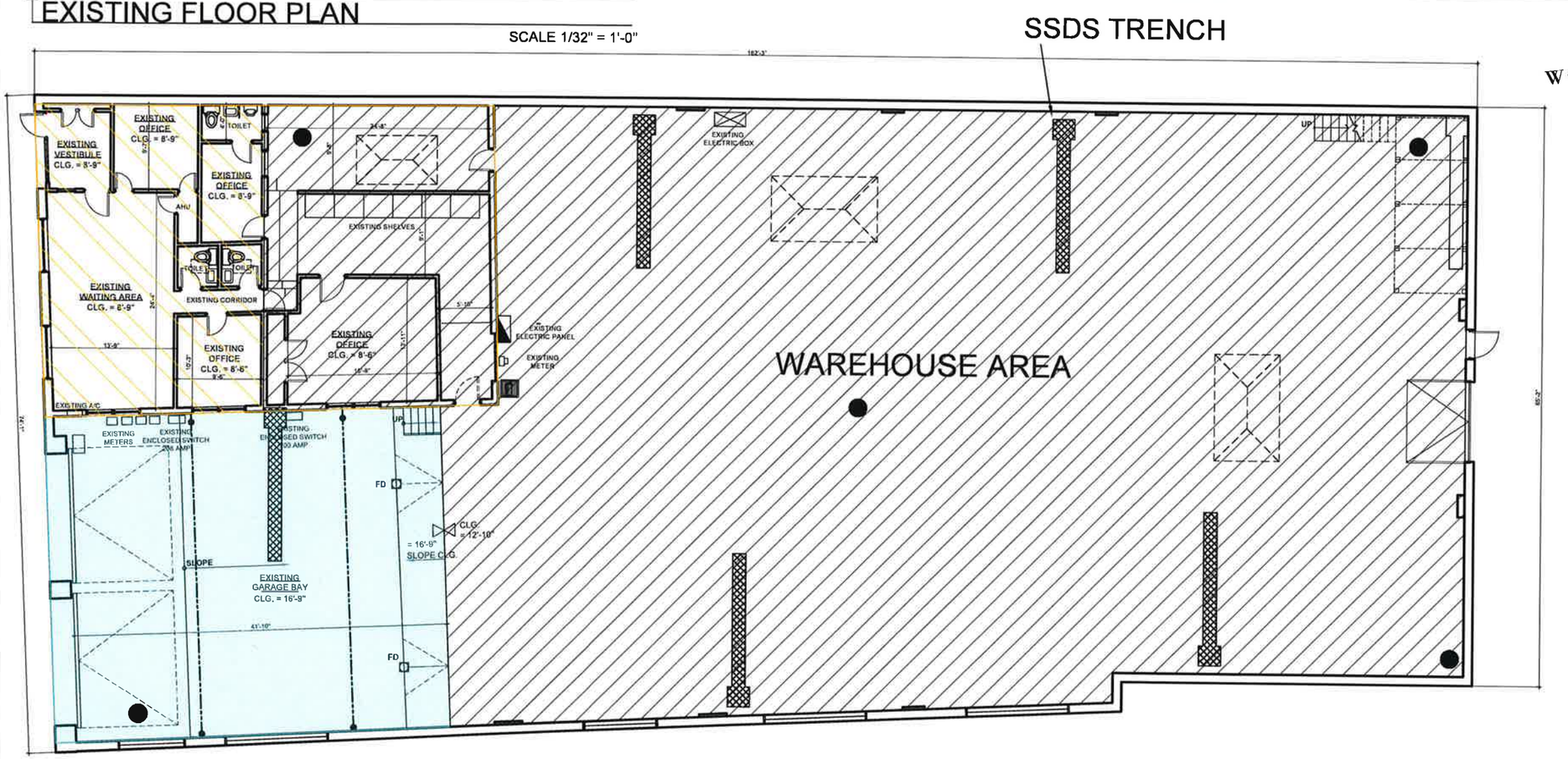
DRAWING TITLE:
COMMUNICATION TESTING
SAMPLE LOCATION LAYOUT
AS BUILT DRAWING

DRAWING NO.:

STATE OF NEW YORK
ROBERT JACKSON
ENGINEER'S SEAL
106372
LICENSED PROFESSIONAL ENGINEER

EXISTING FLOOR PLAN

SCALE 1/32" = 1'-0"



NOTES:

1. 4" SCHEDULE 40 PVC PERFORATED AND SOLID PIPE AND FITTINGS USED FOR THE SUB SLAB PIPE RUNS.
2. EACH OF THE FOUR (4) TRENCHES ARE 2-FEET WIDE BY 12-FEET LONG.
3. PIPING INSTALLED ON A GRADED 4" BED OF ¾" STONE BELOW THE SLAB GRADE.
4. PIPING COUPLED AND GLUED TOGETHER PER MANUFACTURER'S RECOMMENDATION.
5. TRENCH BACKFILLED TO WITHIN 4-INCHES OF FINISH GRADE AND A 20-MIL POLY LINER INSTALLED AND TAPED TO THE EDGES OF THE CONCRETE.
6. PIPING TRANSITIONS ABOVE GROUND TO STEEL PIPING COUPLED TO THE PVC PIPING WITH A "NO HUB" COUPLING.
7. INITIAL 2-FOOT SPOOL OF STEEL PIPE INSTALLED AND SECURED TO THE WALL. CONCRETE REPAIRED WITH A HAND /BAG MIXED 5000 PSI CONCRETE.
8. A FULL PORT THREADED BALL VALVE, A SCH 80 PVC PORT BALL VALVE - $\frac{1}{4}$ INCH MNPT X BARB SAMPLE PORT, AND A MINIHELIC II DIFFERENTIAL PRESSURE GAUGE INSTALLED IN THE PIPING ABOVE GRADE INSIDE THE BUILDING.
9. BOOT INSTALLED ON THE ROOF PENETRATING THE CEILING DIRECTLY ABOVE THE PIPE TO COMPLETE THE VEP INTERIOR INSTALLATION.
10. RN 4EC-4 INLINE RADON FAN SET APPROXIMATELY 2-FEET ABOVE THE ROOF WITH A STACK THAT DOES NOT EXCEED 6-FEET IN OVERALL HEIGHT. A SINGLE POINT OF ANCHORING ON THE ROOF INSTALLED BY RENOVA DIRECTLY TO THE EXISTING PARAPET. SSDS INSTALLED TO MEET NEW YORK STATE DEPARTMENT OF HEALTH, VAPOR INTRUSION GUIDANCE REQUIREMENTS.
11. BUILDING TESTED TO CONFIRM ADEQUATE VACUUM THROUGHOUT THE MONITORED AREA.
12. THE CONTROL FOR THE FIVE EMISSION POINTS INCLUDES INSTALLATION OF THE SENTINEL CLOUD BASED MONITORING SYSTEM. THE SENTINEL IS HOUSED IN A 5.5" X 6.3" X 1.5" ENCLOSURE, WOUNTED ON A WALL INSIDE THE BUILDING.
13. FIVE FLUSH MOUNT MONITORING POINTS/VAPOR PINS CONSISTING OF A STAINLESS STEEL COVER, SAMPLE DEVICE, SIEVE, SLEEVE, AND CAP INSTALLED WITHIN THE BUILDING FLOOR.

LEGEND

- MONITORING POINT / VAPOR PIN
- OFFICE/SHELF AREA
- GARAGE BAY AREA
- 3" TO 5" CONCRETE SLAB
- RETRO-COAT SYSTEM

PREPARED BY:

Equity Environmental Engineering LLC
A Division of GZA

55 LANE ROAD, SUITE 407
FAIRFIELD, NJ 07004

PHONE: (973) 774-3300
EMAIL: ROBERT.JACKSON@GZA.COM
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CLIENT: MURES ALEXANDER LLC.

ATTN: IOAN SITA
EMAIL: IOAN.SITA@STARWIN.COM

STATEMENT:
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NO.	DATE	DESCRIPTION
5	4/25/23	SSDS DETAIL SHEET - 1

PROJECT:
SSDS LAYOUT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

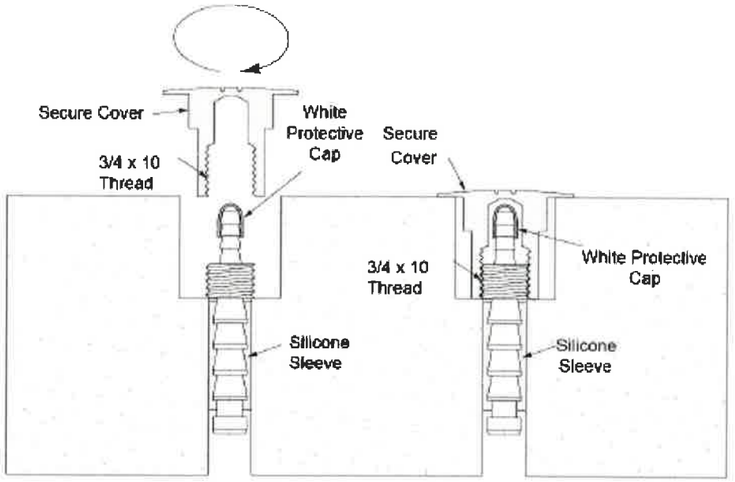
DESIGN BY:	RJ	04/24/2023
DRAWN BY:	JV	10/30/2023
CHECKED BY:	PJ	10/30/2023
FINAL CK BY:	RJ	02/05/2024

PROJECT NO.:
12.0077558.00

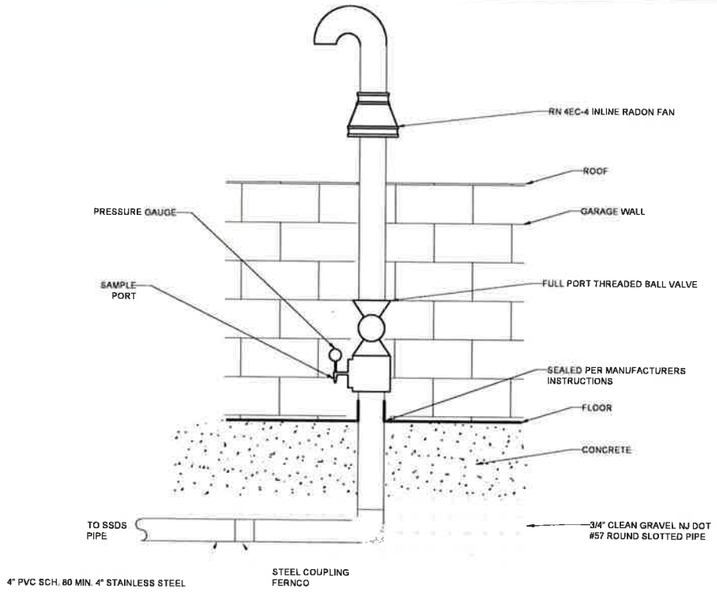
DRAWING TITLE:
SSDS DETAIL
AS BUILT DRAWING
SHEET - 1

DRAWING NO.:
FIGURE - 5

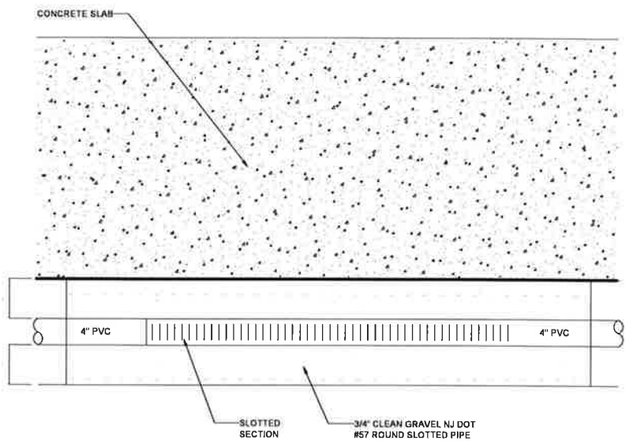
ENGINEER SEAL:



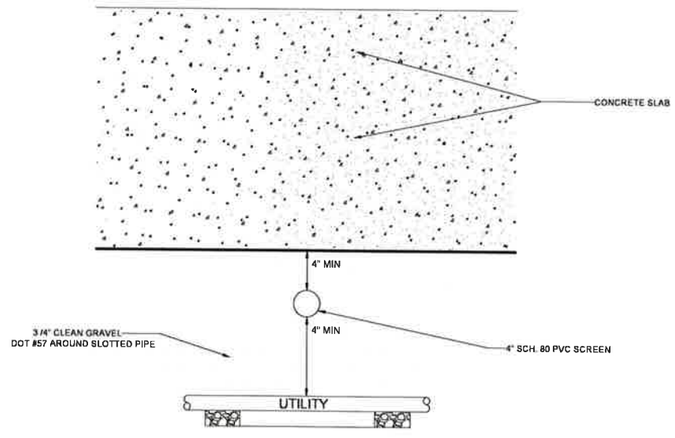
SSDS VAPOR PIN MONITORING POINT DETAIL



SUB SLAB BELOW GRADE/ABOVE GRADE TRANSITION



SSDS INSTALLATION



CONSTRUCTION AND INSTALLATION OF SSDS PIPING

PREPARED BY:

Equity Environmental Engineering LLC
A Division of GZA

55 LANE ROAD, SUITE 407
FAIRFIELD, NJ 07004

PHONE: (973) 774-3300
EMAIL: ROBERT.JACKSON@GZA.COM
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NO.	DATE	DESCRIPTION
5	10/30/23	SSDS DETAIL SHEET - 2

PROJECT:

SSDS LAYOUT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

DESIGN BY:	RJ	04/24/2023
DRAWN BY:	JV	10/30/2023
CHECKED BY:	PJ	10/30/2023
FINAL CK BY:	RJ	02/05/2024

PAGE 2 OF 2

PROJECT NO.:
12.0077558.00

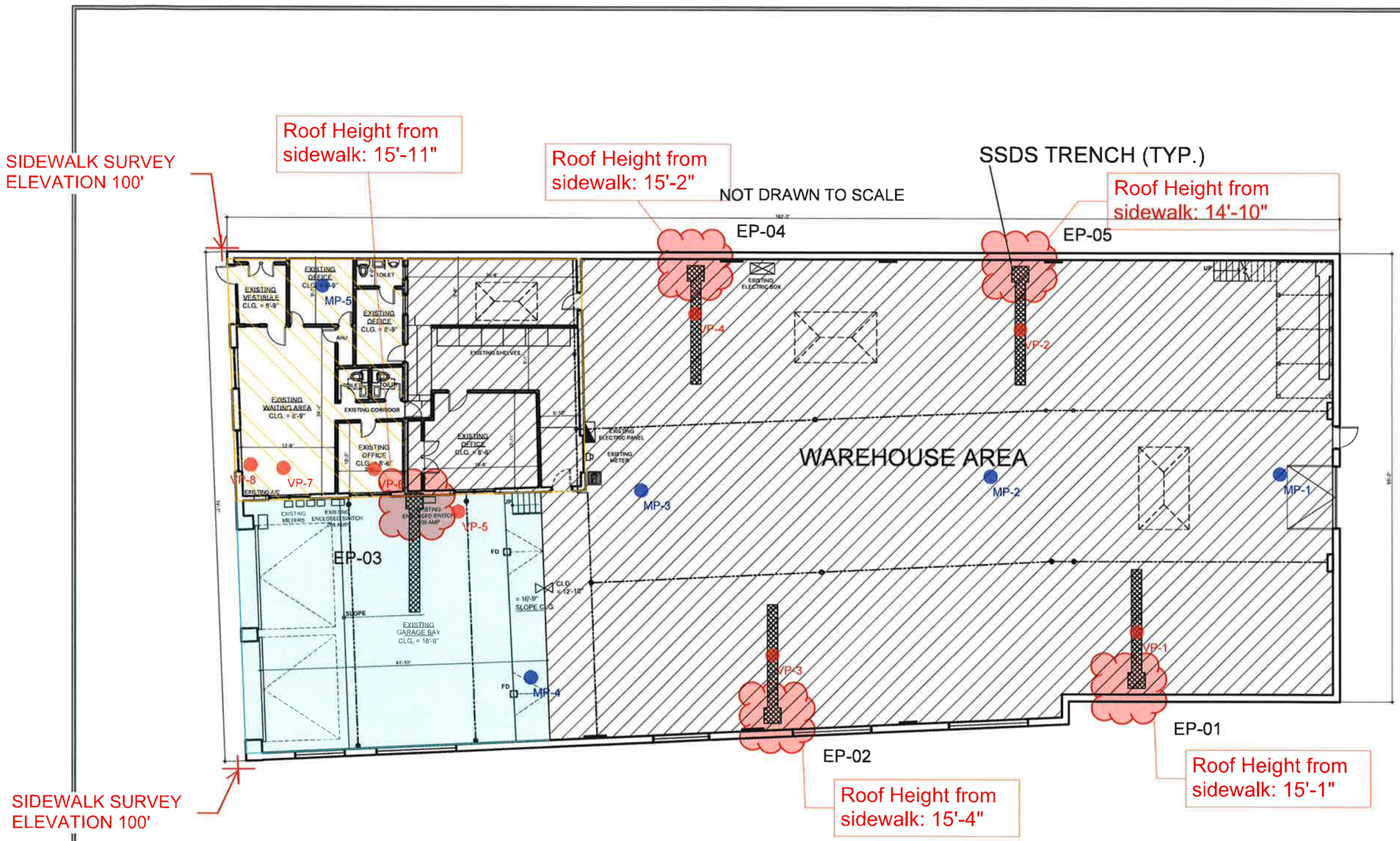
DRAWING TITLE:

SSDS DETAIL
AS BUILT DRAWING
SHEET - 2

DRAWING NO.:

FIGURE 5

ENGINEER SEAL:



LEGEND

- MONITORING POINT
- VAPOR POINT
- OFFICE/SHELF AREA
- GARAGE BAY AREA
- 3" TO 5" CONCRETE SLAB
- RETRO-COAT SYSTEM

72 alexander st field dimensions of roof height based on survey.
10/4/23

It is a violation of the New York State Education law for any person to alter a document in any way, unless acting under the direction of a licensed professional engineer.

PREPARED BY:

Equity Environmental Engineering LLC
A Division of GZA

55 LANE ROAD, SUITE 407
FAIRFIELD, NJ 07004

PHONE: (973) 774-3300
EMAIL: ROBERT.JACKSON@GZA.COM
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NO.	DATE	DESCRIPTION

PROJECT:
SSDS LAYOUT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

DESIGN BY:	RJ	04/24/2023
DRAWN BY:	JV	04/24/2023
CHECKED BY:	RJ	04/24/2023
FINAL CK BY:	RJ	02/05/2024

PAGE 1 OF 1

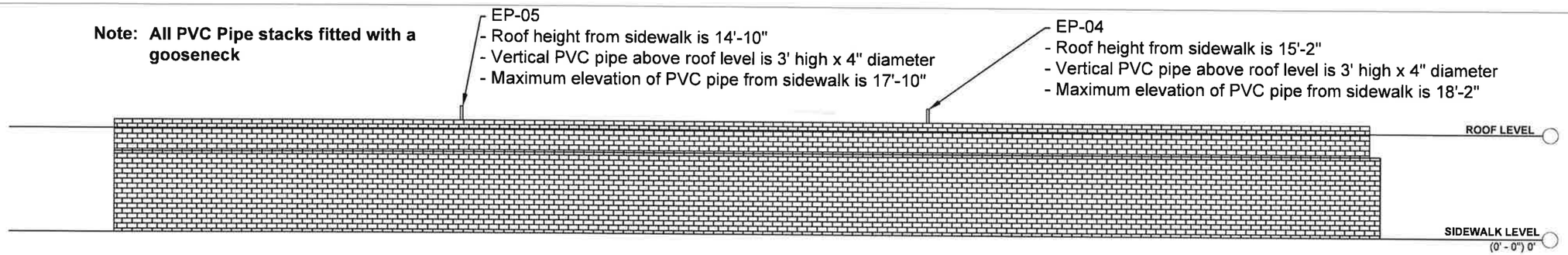
PROJECT NO.:
12.0077558.00

DRAWING TITLE:
COMMUNICATION TESTING
SAMPLE LOCATION LAYOUT
AS BUILT DRAWING

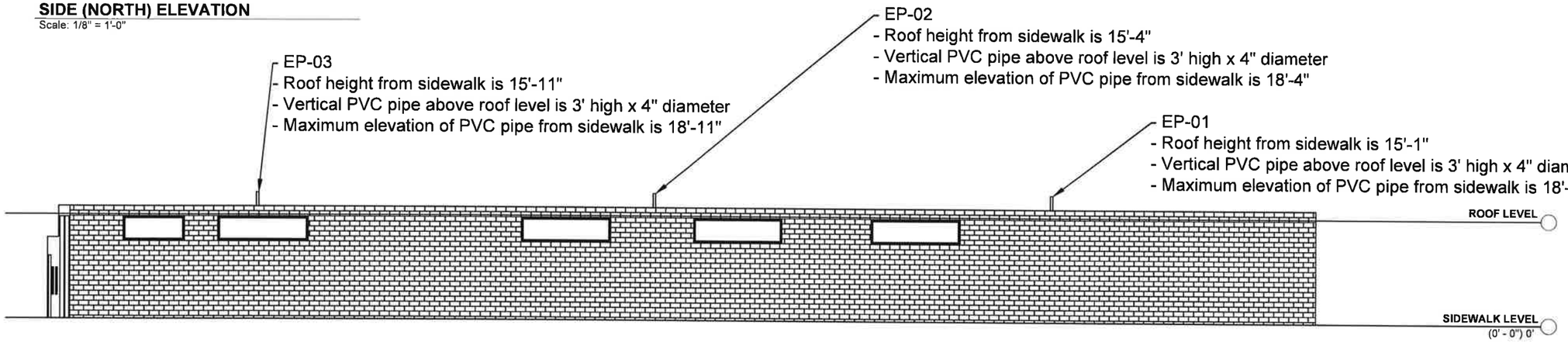
DRAWING NO.:
6

ENGINEER SEAL:

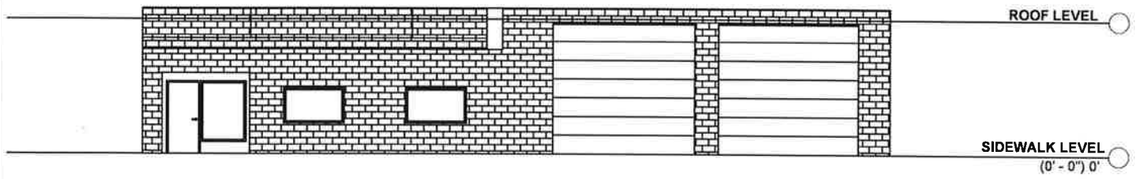
Note: All PVC Pipe stacks fitted with a gooseneck



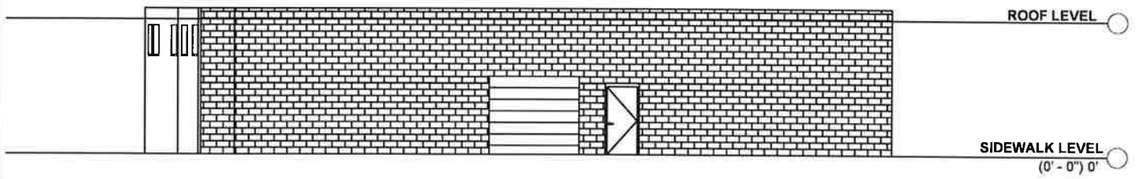
SIDE (NORTH) ELEVATION
Scale: 1/8" = 1'-0"



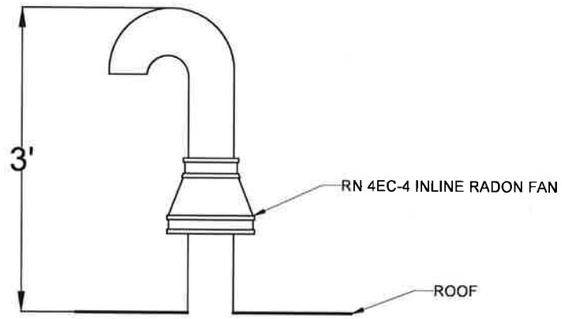
SIDE (SOUTH) ELEVATION
Scale: 1/8" = 1'-0"



ALEXANDER STREET (WEST) ELEVATION
Scale: 1/8" = 1'-0"



REAR (EAST) ELEVATION
Scale: 1/8" = 1'-0"



Detail 1: EQUIPMENT DETAIL

Notes:

1. **Refer to Detail 1 for equipment details.**
2. **Elevations source: Gerald J. Caliendo, R.A., A.I.A. Architect, P.C. - March 7, 2023**

PREPARED BY:

Equity Environmental Engineering LLC
A Division of GZA

55 LANE ROAD, SUITE 407
FAIRFIELD, NJ 07004

PHONE: (973)
EMAIL: ROBERT.JACKSON@GZA.COM
WEB: WWW.GZA.COM

CLIENT: MURES ALEXANDER LLC.

ATTN: IOAN SITA
EMAIL: IOAN.SITA@STARRWN.COM

STATEMENT:
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NO.	DATE	DESCRIPTION
7	12/11/23	ELEVATION VIEW

PROJECT:

SSDS LAYOUT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

DESIGN BY:	RJ	12/07/2023
DRAWN BY:	JV	12/11/2023
CHECKED BY:	RJ	12/11/2023
FINAL CK BY:	RJ	02/05/2024

PAGE 1 OF 1

PROJECT NO.:
12.0077558.00

DRAWING TITLE:
Engineering Controls Location
Elevation View
As Built Drawing

DRAWING NO.: 7

ENGINEER SEAL:

Appendix D – Westchester County Department of Health Certificate to Operate Emission Points.

Westchester County

George Latimer
County Executive

Department of Health

Sherlita Amler, M.D.
Commissioner

May 14, 2024

GZA GeoEnvironmental Inc.
55 Lane Road, Suite 407
Fairfield, NJ 07004
Attn: Robert Jackson, P.E.

RE: Certificate to Operate
Emission Points: EP-01, EP-02, EP-03, EP-04 and EP-05
Glenwood Container Site
72 Alexander Street
Yonkers (C)

Dear Mr. Jackson:

Forwarded herewith, please find a Certificate to Operate a Source of Air Contamination issued for the above premise by the Westchester County Department of Health pursuant to Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County under **Permit Number 52-9977, 52-9978, 52-9979, 52-9980 and 52-9981.**

Your attention is directed to the installation description, expiration date and conditions of approval.

Please be advised that the applicant is responsible for the proper maintenance and operation of the above-referenced installation in such a manner that it will not exceed the emission limits or contravene the provisions of applicable State and County Air Pollution Control Regulations. Proper training of personnel in the operation of this equipment should be arranged for with the manufacturer or supplier of the equipment.

Respectfully,

Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

DT:XL:jd

cc: Ioan Sita – Mures Alexander LLC.
Lawrence Donohue – Building Inspector, Yonkers
Maria Antoniou, P.E., NYSDEC-WP
File

REDUCE REUSE RECYCLE

Department of Health
[illegible] Moore Avenue
[illegible]ount Kisco, NY 10549 Telephone: (914) 813-5161 Fax: (914) 813-5158

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
25 MOORE AVENUE
MOUNT KISCO, NY 10549
SHERLITA AMLER, MD, COMMISSIONER

EMISSION POINT:EP-01 **PERMIT NUMBER : 52-9977**

CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

Approval is hereby given for the operation of an air contamination source pursuant to the provisions of Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County.

OWNER/OPERATOR	Ioan Sita	**INSTALLATION ADDRESS**
NAME:	Mures Alexander LLC	Glenwood Container Site
ADDRESS:	214 Starr Street, 2nd Floor Brooklyn, NY 11237	72 Alexander Street Yonkers

DESCRIPTION: To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

CONDITIONS:

1. This source of contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII, of the Laws of Westchester County and the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

2. This Certificate may be suspended or revoked, as provided by the Laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with provisions of Chapter 873, Article XIII of the Laws of Westchester County, or of the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

3. Air contaminants collected by air cleaning devices shall be handled and disposed of in a manner whereby they will not be introduced in the outer air.

4. That the construction or modification of this source of air contamination is in accordance with figure 1, 2A, 2B, 3, 4, 5 and dated February 24, 2023 and marked "as-built"

5. That the emission from this source of air contamination shall not exceed those set forth on the attached Appendix A.

FOR THE COMMISSIONER

Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: May 14, 2024

Certificate Expires: December 31, 2027

THIS APPROVAL IS NOT TRANSFERABLE-PLEASE POST

APPENDIX A

EMISSION POINT: EP-01 **PERMIT NUMBER: 52-9977**

CONTAMINANT	CAS No.	ACTUAL EMISSION RATE LB./HR.	PERMISSIBLE EMISSION RATE LB./HR.
Dichlorodifluoromethane	75-69-4	0.0000002	0.0000002
Ethanol	64-17-5	0.00003	0.00003
Acetone	67-64-1	0.00005	0.00005
Trichlorofluoromethane	75-69-4	0.0000002	0.0000002
Isopropanol	67-63-0	0.000002	0.000002
Tertiary butyl Alcohol	75-65-0	0.0000009	0.0000009
Carbon disulfide	75-15-0	0.0000004	0.0000004
1,1- Dichloroethane	75-34-3	0.000003	0.000003
2-Butanone	78-93-3	0.000001	0.000001
Chloroform	67-66-3	0.0000079	0.0000079
n-Hexane	110-54-3	0.0000001	0.0000001
1,1,1- Trichloroethane	71-55-6	0.00332	0.00332
Benzene	71-43-2	0.0000003	0.0000003
Cyclohexane	110-82-7	0.0000002	0.0000002
Heptane	142-82-5	0.0000001	0.0000001
Toluene	108-88-3	0.000002	0.000002
Tetrachloroethene	127-18-4	0.00003	0.00003
p/m-Xylene	179601-23-1	0.0000003	0.0000003
o-Xylene	95-47-6	0.0000002	0.0000002
1,2,4-Trimethylbenzene	95-63-6	0.0000002	0.0000002

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
25 MOORE AVENUE
MOUNT KISCO, NY 10549
SHERLITA AMLER, MD, COMMISSIONER

EMISSION POINT:EP-02 **PERMIT NUMBER : 52-9978**

CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

Approval is hereby given for the operation of an air contamination source pursuant to the provisions of Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County.

OWNER/OPERATOR	loan Sita	**INSTALLATION ADDRESS**
NAME:	Mures Alexander LLC	Glenwood Container Site
ADDRESS:	214 Starr Street, 2nd Floor Brooklyn, NY 11237	72 Alexander Street Yonkers

DESCRIPTION: To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

CONDITIONS:

1. This source of contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII, of the Laws of Westchester County and the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

2. This Certificate may be suspended or revoked, as provided by the Laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with provisions of Chapter 873, Article XIII of the Laws of Westchester County, or of the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

3. Air contaminants collected by air cleaning devices shall be handled and disposed of in a manner whereby they will not be introduced in the outer air.

4. That the construction or modification of this source of air contamination is in accordance with figure 1, 2A, 2B, 3, 4, 5 and dated February 24, 2023 and marked "as-built"

5. That the emission from this source of air contamination shall not exceed those set forth on the attached Appendix A.

FOR THE COMMISSIONER

Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: May 14, 2024

Certificate Expires: December 31, 2027

THIS APPROVAL IS NOT TRANSFERABLE-PLEASE POST

APPENDIX A

EMISSION POINT: EP-02 **PERMIT NUMBER: 52-9978**

CONTAMINANT	CAS No.	ACTUAL EMISSION RATE LB./HR.	PERMISSIBLE EMISSION RATE LB./HR.
Dichlorodifluoromethane	75-69-4	0.0000002	0.0000002
Ethanol	64-17-5	0.00003	0.00003
Acetone	67-64-1	0.00005	0.00005
Trichlorofluoromethane	75-69-4	0.0000002	0.0000002
Isopropanol	67-63-0	0.000002	0.000002
Tertiary butyl Alcohol	75-65-0	0.0000009	0.0000009
Carbon disulfide	75-15-0	0.0000004	0.0000004
1,1- Dichloroethane	75-34-3	0.000003	0.000003
2-Butanone	78-93-3	0.000001	0.000001
Chloroform	67-66-3	0.0000079	0.0000079
n-Hexane	110-54-3	0.0000001	0.0000001
1,1,1- Trichloroethane	71-55-6	0.00332	0.00332
Benzene	71-43-2	0.0000003	0.0000003
Cyclohexane	110-82-7	0.0000002	0.0000002
Heptane	142-82-5	0.0000001	0.0000001
Toluene	108-88-3	0.000002	0.000002
Tetrachloroethene	127-18-4	0.00003	0.00003
p/m-Xylene	179601-23-1	0.0000003	0.0000003
o-Xylene	95-47-6	0.0000002	0.0000002
1,2,4-Trimethylbenzene	95-63-6	0.0000002	0.0000002

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
25 MOORE AVENUE
MOUNT KISCO, NY 10549
SHERLITA AMLER, MD, COMMISSIONER

EMISSION POINT:EP-03 **PERMIT NUMBER : 52-9979**

CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

Approval is hereby given for the operation of an air contamination source pursuant to the provisions of Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County.

OWNER/OPERATOR	Ioan Sita	**INSTALLATION ADDRESS**
NAME:	Mures Alexander LLC	Glenwood Container Site
ADDRESS:	214 Starr Street, 2nd Floor Brooklyn, NY 11237	72 Alexander Street Yonkers

DESCRIPTION: To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

CONDITIONS:

1. This source of contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII, of the Laws of Westchester County and the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

2. This Certificate may be suspended or revoked, as provided by the Laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with provisions of Chapter 873, Article XIII of the Laws of Westchester County, or of the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

3. Air contaminants collected by air cleaning devices shall be handled and disposed of in a manner whereby they will not be introduced in the outer air.

4. That the construction or modification of this source of air contamination is in accordance with figure 1, 2A, 2B, 3, 4, 5 and dated February 24, 2023 and marked "as-built"

5. That the emission from this source of air contamination shall not exceed those set forth on the attached Appendix A.

FOR THE COMMISSIONER

Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: May 14, 2024

Certificate Expires: December 31, 2027

THIS APPROVAL IS NOT TRANSFERABLE-PLEASE POST

APPENDIX A

EMISSION POINT: EP-03 **PERMIT NUMBER: 52-9979**

CONTAMINANT	CAS No.	ACTUAL EMISSION RATE LB./HR.	PERMISSIBLE EMISSION RATE LB./HR.
Dichlorodifluoromethane	75-69-4	0.0000002	0.0000002
Ethanol	64-17-5	0.00003	0.00003
Acetone	67-64-1	0.00005	0.00005
Trichlorofluoromethane	75-69-4	0.0000002	0.0000002
Isopropanol	67-63-0	0.000002	0.000002
Tertiary butyl Alcohol	75-65-0	0.0000009	0.0000009
Carbon disulfide	75-15-0	0.0000004	0.0000004
1,1- Dichloroethane	75-34-3	0.000003	0.000003
2-Butanone	78-93-3	0.000001	0.000001
Chloroform	67-66-3	0.0000079	0.0000079
n-Hexane	110-54-3	0.0000001	0.0000001
1,1,1- Trichloroethane	71-55-6	0.00332	0.00332
Benzene	71-43-2	0.0000003	0.0000003
Cyclohexane	110-82-7	0.0000002	0.0000002
Heptane	142-82-5	0.0000001	0.0000001
Toluene	108-88-3	0.000002	0.000002
Tetrachloroethene	127-18-4	0.00003	0.00003
p/m-Xylene	179601-23-1	0.0000003	0.0000003
o-Xylene	95-47-6	0.0000002	0.0000002
1,2,4-Trimethylbenzene	95-63-6	0.0000002	0.0000002

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
25 MOORE AVENUE
MOUNT KISCO, NY 10549
SHERLITA AMLER, MD, COMMISSIONER

EMISSION POINT:EP-04 **PERMIT NUMBER : 52-9980**

CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

Approval is hereby given for the operation of an air contamination source pursuant to the provisions of Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County.

OWNER/OPERATOR	Ioan Sita	**INSTALLATION ADDRESS**
NAME:	Mures Alexander LLC	Glenwood Container Site
ADDRESS:	214 Starr Street, 2nd Floor Brooklyn, NY 11237	72 Alexander Street Yonkers

DESCRIPTION: To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

CONDITIONS:

1. This source of contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII, of the Laws of Westchester County and the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

2. This Certificate may be suspended or revoked, as provided by the Laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with provisions of Chapter 873, Article XIII of the Laws of Westchester County, or of the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

3. Air contaminants collected by air cleaning devices shall be handled and disposed of in a manner whereby they will not be introduced in the outer air.

4. That the construction or modification of this source of air contamination is in accordance with figure 1, 2A, 2B, 3, 4, 5 and dated February 24, 2023 and marked "as-built"

5. That the emission from this source of air contamination shall not exceed those set forth on the attached Appendix A.

FOR THE COMMISSIONER

Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: May 14, 2024

Certificate Expires: December 31, 2027

THIS APPROVAL IS NOT TRANSFERABLE-PLEASE POST

APPENDIX A

EMISSION POINT: EP-04 **PERMIT NUMBER: 52-9980**

CONTAMINANT	CAS No.	ACTUAL EMISSION RATE LB./HR.	PERMISSIBLE EMISSION RATE LB./HR.
Dichlorodifluoromethane	75-69-4	0.0000002	0.0000002
Ethanol	64-17-5	0.00003	0.00003
Acetone	67-64-1	0.00005	0.00005
Trichlorofluoromethane	75-69-4	0.0000002	0.0000002
Isopropanol	67-63-0	0.000002	0.000002
Tertiary butyl Alcohol	75-65-0	0.0000009	0.0000009
Carbon disulfide	75-15-0	0.0000004	0.0000004
1,1- Dichloroethane	75-34-3	0.000003	0.000003
2-Butanone	78-93-3	0.000001	0.000001
Chloroform	67-66-3	0.0000079	0.0000079
n-Hexane	110-54-3	0.0000001	0.0000001
1,1,1- Trichloroethane	71-55-6	0.00332	0.00332
Benzene	71-43-2	0.0000003	0.0000003
Cyclohexane	110-82-7	0.0000002	0.0000002
Heptane	142-82-5	0.0000001	0.0000001
Toluene	108-88-3	0.000002	0.000002
Tetrachloroethene	127-18-4	0.00003	0.00003
p/m-Xylene	179601-23-1	0.0000003	0.0000003
o-Xylene	95-47-6	0.0000002	0.0000002
1,2,4-Trimethylbenzene	95-63-6	0.0000002	0.0000002

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
25 MOORE AVENUE
MOUNT KISCO, NY 10549
SHERLITA AMLER, MD, COMMISSIONER

EMISSION POINT:EP-05 **PERMIT NUMBER : 52-9981**

CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

Approval is hereby given for the operation of an air contamination source pursuant to the provisions of Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County.

OWNER/OPERATOR	Ioan Sita	**INSTALLATION ADDRESS**
NAME:	Mures Alexander LLC	Glenwood Container Site
ADDRESS:	214 Starr Street, 2nd Floor Brooklyn, NY 11237	72 Alexander Street Yonkers

DESCRIPTION: To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

CONDITIONS:

1. This source of contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII, of the Laws of Westchester County and the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

2. This Certificate may be suspended or revoked, as provided by the Laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with provisions of Chapter 873, Article XIII of the Laws of Westchester County, or of the air pollution control regulations contained in Title 6 (Environmental Conservation) of the Official compilation of Codes, Rules and Regulations of the State of New York.

3. Air contaminants collected by air cleaning devices shall be handled and disposed of in a manner whereby they will not be introduced in the outer air.

4. That the construction or modification of this source of air contamination is in accordance with figure 1, 2A, 2B, 3, 4, 5 and dated February 24, 2023 and marked "as-built"

5. That the emission from this source of air contamination shall not exceed those set forth on the attached Appendix A.

FOR THE COMMISSIONER

Delroy Taylor, P.E.
Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: May 14, 2024

Certificate Expires: December 31, 2027

THIS APPROVAL IS NOT TRANSFERABLE-PLEASE POST

APPENDIX A

EMISSION POINT: EP-05 **PERMIT NUMBER: 52-9981**

CONTAMINANT	CAS No.	ACTUAL EMISSION RATE LB./HR.	PERMISSIBLE EMISSION RATE LB./HR.
Dichlorodifluoromethane	75-69-4	0.0000002	0.0000002
Ethanol	64-17-5	0.00003	0.00003
Acetone	67-64-1	0.00005	0.00005
Trichlorofluoromethane	75-69-4	0.0000002	0.0000002
Isopropanol	67-63-0	0.000002	0.000002
Tertiary butyl Alcohol	75-65-0	0.0000009	0.0000009
Carbon disulfide	75-15-0	0.0000004	0.0000004
1,1- Dichloroethane	75-34-3	0.000003	0.000003
2-Butanone	78-93-3	0.000001	0.000001
Chloroform	67-66-3	0.0000079	0.0000079
n-Hexane	110-54-3	0.0000001	0.0000001
1,1,1- Trichloroethane	71-55-6	0.00332	0.00332
Benzene	71-43-2	0.0000003	0.0000003
Cyclohexane	110-82-7	0.0000002	0.0000002
Heptane	142-82-5	0.0000001	0.0000001
Toluene	108-88-3	0.000002	0.000002
Tetrachloroethene	127-18-4	0.00003	0.00003
p/m-Xylene	179601-23-1	0.0000003	0.0000003
o-Xylene	95-47-6	0.0000002	0.0000002
1,2,4-Trimethylbenzene	95-63-6	0.0000002	0.0000002

Westchester gov.com

George Latimer
County Executive

Department of Health
Sherlita Amler, M.D.
Commissioner of Health

Westchester County Department of Health

Bureau of Environmental Quality

CERTIFICATE TO OPERATE SOURCES OF AIR CONTAMINATION

Facility Information:

Emission Point Number: EP-01

Facility Name: Glenwood Container Site

Facility Telephone: (516) 860-8609

Street Address: 72 Alexander Street Yonkers, NY 10701

Municipality:

Facility Owner Information:

Owner's Name: Mures Alexander LLC loan Sita

Owner Telephone:(516) 860-8609

Mailing Address: 214 Starr Street, 2nd Floor Brooklyn, NY 11237

Description Process:

To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

The Certificate supersedes any earlier Certificate to Operate issued for this source by the Department pursuant to Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County.

That the operation of this source is in accordance with the source description, approved plans, and emission limits for this source on file with the Department.

The source of air contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII of the Laws of Westchester County and 6NYCRRR.

This certificate shall be suspended or revoked as provided by the laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with the above.

Air contaminants collected by air cleaning devices shall be handled and disposed of in an approved manner.

FOR THE COMMISSIONER

Sherlita Amler MD

BY: _____
Sherlita Amler, M.D.
Commissioner of Health

SHERLITA AMLER, M.D.

BY: _____
Delroy Taylor, P.E., Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: 05/14/2024

Certificate Expires: 12/31/2027

THIS PERMIT MUST BE POSTED CONSPICUOUSLY

Westchester gov.com

George Latimer
County Executive

Department of Health
Sherlita Amler, M.D.
Commissioner of Health

Westchester County Department of Health

Bureau of Environmental Quality

CERTIFICATE TO OPERATE SOURCES OF AIR CONTAMINATION

Facility Information:

Emission Point Number: EP-02

Facility Name: Glenwood Container Site

Facility Telephone: (516) 860-8609

Street Address: 72 Alexander Street Yonkers, NY 10701

Municipality:

Facility Owner Information:

Owner's Name: Mures Alexander LLC loan Sita

Owner Telephone:(516) 860-8609

Mailing Address: 214 Starr Street, 2nd Floor Brooklyn, NY 11237

Description Process:

To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

The Certificate supersedes any earlier Certificate to Operate issued for this source by the Department pursuant to Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County.

That the operation of this source is in accordance with the source description, approved plans, and emission limits for this source on file with the Department.

The source of air contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII of the Laws of Westchester County and 6NYCRRR.

This certificate shall be suspended or revoked as provided by the laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with the above.

Air contaminants collected by air cleaning devices shall be handled and disposed of in an approved manner.

FOR THE COMMISSIONER

BY: Sherlita Amler MD

Sherlita Amler, M.D.
Commissioner of Health

SHERLITA AMLER, M.D.

BY:

Delroy Taylor, P.E., Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: 05/14/2024

Certificate Expires: 12/31/2027

25 Moore Avenue • Mount Kisco, NY 10549

THIS PERMIT MUST BE POSTED CONSPICUOUSLY

Westchester gov.com

George Latimer
County Executive

Department of Health
Sherlita Amler, M.D.
Commissioner of Health

Westchester County Department of Health

Bureau of Environmental Quality

CERTIFICATE TO OPERATE SOURCES OF AIR CONTAMINATION

Facility Information:

Emission Point Number: EP-03

Facility Name: Glenwood Container Site

Facility Telephone: (516) 860-8609

Street Address: 72 Alexander Street Yonkers, NY 10701

Municipality:

Facility Owner Information:

Owner's Name: Mures Alexander LLC Ioan Sita

Owner Telephone:(516) 860-8609

Mailing Address: 214 Starr Street, 2nd Floor Brooklyn, NY 11237

Description Process:

To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

The Certificate supersedes any earlier Certificate to Operate issued for this source by the Department pursuant to Chapter 873, Article XIII, Section 873.1306.1 of the Laws of Westchester County.

That the operation of this source is in accordance with the source description, approved plans, and emission limits for this source on file with the Department.

The source of air contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII of the Laws of Westchester County and 6NYCRRR.

This certificate shall be suspended or revoked as provided by the laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with the above.

Air contaminants collected by air cleaning devices shall be handled and disposed of in an approved manner.

FOR THE COMMISSIONER

BY: Sherlita Amler MD

Sherlita Amler, M.D.
Commissioner of Health

SHERLITA AMLER, M.D.

BY:

Delroy Taylor, P.E., Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: 05/14/2024

Certificate Expires: 12/31/2027

THIS PERMIT MUST BE POSTED CONSPICUOUSLY

Westchester gov.com

George Latimer
County Executive

Department of Health
Sherlita Amler, M.D.
Commissioner of Health

Westchester County Department of Health

Bureau of Environmental Quality

CERTIFICATE TO OPERATE SOURCES OF AIR CONTAMINATION

Facility Information:

Emission Point Number: EP-04

Facility Name: Glenwood Container Site

Facility Telephone: (516) 860-8609

Street Address: 72 Alexander Street Yonkers, NY 10701

Municipality:

Facility Owner Information:

Owner's Name: Mures Alexander LLC Ioan Sita

Owner Telephone:(516) 860-8609

Mailing Address: 214 Starr Street, 2nd Floor Brooklyn, NY 11237

Description Process:

To operate a Sub Slab Depressurization System consists of one (1) Fantech Rn 4EC-4 inline Radon Fan rated at 25 ACFM with Dwyer Minihelic II Differential Pressure Gauge. Contaminants are exhausted to the atmosphere via 4-inch diameter stack.

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That the operation of this source is in accordance with the source description, approved plans, and emission limits for this source on file with the Department.

The source of air contamination shall be operated in compliance with the provisions of Chapter 873, Article XIII of the Laws of Westchester County and 6NYCRRR.

This certificate shall be suspended or revoked as provided by the laws of Westchester County, if this source of air contamination is maintained or operated other than in compliance with the above.

Air contaminants collected by air cleaning devices shall be handled and disposed of in an approved manner.

FOR THE COMMISSIONER

BY: Sherlita Amler MD

Sherlita Amler, M.D.
Commissioner of Health

SHERLITA AMLER, M.D.

BY:

Delroy Taylor, P.E., Assistant Commissioner
Bureau of Environmental Quality

Certificate Issued: 05/14/2024

Certificate Expires: 12/31/2027

THIS PERMIT MUST BE POSTED CONSPICUOUSLY

FORM A

Westchester gov.com

Westchester County Department of Health
Bureau of Environmental Quality
25 Moore Avenue
Mount Kisco, NY 10549

APPLICATION FOR A PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

SECTION A:

1. OWNER OF FACILITY: Mures Alexander, LLC Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
2. OWNER ADDRESS (#, Street,City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
3. FACILITY NAME: Glenwood Container Site - BCP Site Number: C360154 Telephone:
4. FACILITY ADDRESS: 72 Alexander Street, Yonkers, NY 10701
5. AUTHORIZED AGENT: Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
6. ADDRESS (#, Street, City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
7. INSTALLER or CONTRACTOR Renova Environmental Company Telephone: : (732) 659-1000
8. ADDRESS : 3417 Sunset Ave., Ocean Twp., NJ 07712

SECTION B:

EMISSION POINT: EP-01 PERMIT NUMBER: 52-9977 (CTO)
(to be filled in by agency)

DESCRIPTION OF PROCESS: (include existing, new or modified equipment):

Existing active SSDS mitigation system employs specialized fans to exhaust vapors from underneath building structure via an existing sealed pipe system. These systems are designed to remove vapors before it migrates into the building envelope.

SECTION C:

AIR POLUTION CONTROL EQUIPMENT DESCRIPTION:

N/A

SECTION D:

DESIGN DATA

Attach one (1) original Westchester County Department of Health Application Form B1 or Form B2.

SECTION E:

Submit two (2) copies of a complete set of plans for this construction bearing original Professional Engineer seal and signature, drawing ID number and date.

This Application is submitted in accordance with the provisions of Chapter 873 Article XIII, Section 873.1303.1 of the Laws of Westchester County.

Owners Signature — Date: 2/6/2024

Professional Engineer — Date: 2/15/24

Professional Engineer Seal/Stamp

DO NOT WRITE BENEATH THIS LINE:

PERMIT TO CONSTRUCT			CERTIFICATE TO OPERATE		
Reviewer:		Date:	Reviewer:		Date: 5/14/2024
Recommended For Approval:		Date:	Recommended For Approval:	NC	Date: 5/14/2024
Approved By:		Date:	Approved By:		Date: 5/14/2024

SECTION F: Certificate to Operate

COMPLETION OF WORKS

This source of air contamination has been constructed or modified in accordance with the Westchester County Department of Health Certificates of Approval and Approval of Plans or approved revisions thereto.

Professional Engineer Seal

Professional Engineer Signature — Date: 2/15/24

Owners Signature — Date: 2/6/2024

rev. 12/19

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

1. NAME OF OWNER/FIRM			2. NAME OF PROFESSIONAL ENGINEER		9. TELEPHONE		18. FACILITY NAME	
Mures Alexander, LLC			Robert Jackson, P.E.		(973) 738-0782		Glenwood Container Site	
2. NUMBER AND STREET ADDRESS			10. NUMBER AND STREET ADDRESS				19. FACILITY LOCATION (# & ST. ADDRESS)	
214 Starr Street, 2nd Floor			55 Lane Road Suite 407				72 Alexander Street	
3. CITY/TOWN/VILLAGE	4. STATE	5. ZIP	11. CITY/TOWN/VILLAGE	12. STATE	13. ZIP		20. CITY/TOWN/VILLAGE	21. ZIP
Brooklyn	NY	11237	Fairfield	NJ	07004		Yonkers	10701
			14. NYSPE STAMP/SEAL	15. NYSPE LICENSE #	16. DATE OF SIGNATURE		22. BUILDING NAME OR NO.	23. START UP DATE
				160372	2/15/24		Glenwood Container Site BCP Site Number: C360154	02 / 2024 MO YR
6. NAME & TITLE OF OWNERS REP.		7. TEL. #	17. SIGNATURE OF PROFESSIONAL ENGINEER WHEN APPLYING FOR A PERMIT TO CONSTRUCT				24. DRAWING NUMBERS OF PLANS SUBMITTED	
Ioan Sita Property Owner		(215) 409-3315						

25. EMISSION POINT NO.	26. GROUND ELEV(FT.)	27. HEIGHT ABOVE STRUCTURES (FT)	28. STACK HGT.(FT)	29. INSIDE DIAM.(IN)	30. EXIT TEMP (°F)	31. EXIT VELOCITY (FT./SEC.)	32. EXIT FLOW RATE (ACFM)		
EP-01	7	3	18' 1"	4	70	4.77	125		

33. PERMIT TO CONSTRUCT	34. CERTIFICATE TO OPERATE	35. % OPERATION BY SEASON				36. HRS./DAY	37. DAYS/YR.
A. ☒ NEW SOURCE B. ☐ MODIFICATION	A. ☒ NEW SOURCE C. ☐ EXISTING SOURCE B. ☐ MODIFICATION	WINTER 25%	SPRING 25%	SUMMER 25%	FALL 25%	24/7	365

38. DESCRIBE PROCESS OR UNIT		
1. Active SSDS mitigation systems employ specialized fans to exhaust vapors from underneath building structures via a sealed pipe system. These	2.	
3. systems are designed to remove vapors before it migrates into the building envelope.	4.	
5.	6.	
7.	8.	

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A	N/A	Fantech RN Series 4EC-4 Inline Radon Fan	N/A	02/2024	N/A

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/HR)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^3
Dichlorodifluoromethane	75-69-4	1.87	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Ethanol	64-17-5	315	ug/m3	9	N/A	0.00003	0.00003	0.26	0
Acetone	67-64-1	504	ug/m3	9	N/A	0.00005	0.00005	0.41	0
Trichlorofluoromethane	75-69-4	2.38	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Isopropanol	67-63-0	53.1	ug/m3	9	N/A	0.000002	0.000002	0.04	0
Tertiary butyl Alcohol	75-65-0	9.76	ug/m3	9	N/A	0.0000009	0.0000009	0.01	0
Carbon disulfide	75-15-0	3.77	ug/m3	9	N/A	0.0000004	0.0000004	0.003	0
1,1-Dichloroethane	75-34-3	37.2	ug/m3	9	N/A	0.000003	0.000003	0.03	0
2-Butanone	78-93-3	12.7	ug/m3	9	N/A	0.000001	0.000001	0.01	0
Chloroform	67-66-3	85	ug/m3	9	N/A	0.0000079	0.0000079	0.069	0
n-Hexane	110-54-3	1.34	ug/m3	9	N/A	0.0000001	0.0000001	0.001	0
1,1,1-Trichloroethane	71-55-6	35700	ug/m3	9	N/A	0.00332	0.00332	29.10	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative

THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.

55. Signature of Authorized Representative of Agent

Date 2/6/24

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

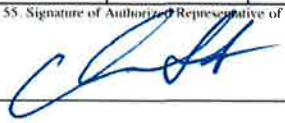
PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

38. DESCRIBE PROCESS OR UNIT	1.	2.
	3.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A					

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/Hr)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^5
Benzene	71-43-2	2.69	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
Cyclohexane	110-82-7	2.11	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Heptane	142-82-5	1.37	ug/m3	9	N/A	0.0000001	0.0000001	0.001	0
Toluene	108-88-3	18.7	ug/m3	9	N/A	0.000002	0.000002	0.02	0
Tetrachloroethene	127-18-4	321	ug/m3	9	N/A	0.00003	0.00003	0.26	0
p/m-Xylene	179601-23-1	2.84	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
o-Xylene	95-47-6	2.15	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
1,2,4-Trimethylbenzene	95-63-6	1.64	ug/m3	9	N/A	0.0000002	0.0000002	0.001	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative	55. Signature of Authorized Representative of Agent	Date
THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.		2/6/24

FORM A

Westchester gov.com

Westchester County Department of Health
Bureau of Environmental Quality
25 Moore Avenue
Mount Kisco, NY 10549

APPLICATION FOR A PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

SECTION A:

1. OWNER OF FACILITY: Mures Alexander, LLC Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
2. OWNER ADDRESS (#, Street,City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
3. FACILITY NAME: Glenwood Container Site - BCP Site Number: C360154 Telephone:
4. FACILITY ADDRESS: 72 Alexander Street, Yonkers, NY 10701
5. AUTHORIZED AGENT: Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
6. ADDRESS (#, Street, City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
7. INSTALLER or CONTRACTOR Renova Environmental Company Telephone: : (732) 659-1000
8. ADDRESS : 3417 Sunset Ave., Ocean Twp., NJ 07712

SECTION B:

EMISSION POINT: EP-02 PERMIT NUMBER: 52-9978 (CTO)
(to be filled in by agency)

DESCRIPTION OF PROCESS: (include existing, new or modified equipment):

Existing active SSDS mitigation system employs specialized fans to exhaust vapors from underneath building structure via an existing sealed pipe system. These systems are designed to remove vapors before it migrates into the building envelope.

SECTION C:

AIR POLUTION CONTROL EQUIPMENT DESCRIPTION:

N/A

SECTION D:

DESIGN DATA

Attach one (1) original Westchester County Department of Health Application Form B1 or Form B2.

SECTION E:

Submit two (2) copies of a complete set of plans for this construction bearing original Professional Engineer seal and signature, drawing ID number and date.

This Application is submitted in accordance with the provisions of Chapter 873 Article XIII, Section 873.1303.1 of the Laws of Westchester County.

Owners Signature — Date: 2/6/2024

Professional Engineer — Date: 2/15/24

Professional Engineer Seal/Stamp

DO NOT WRITE BENEATH THIS LINE:

PERMIT TO CONSTRUCT		CERTIFICATE TO OPERATE	
Reviewer: _____	Date: _____	Reviewer: _____	Date: 5/14/2024
Recommended For Approval: _____	Date: _____	Recommended For Approval: _____ NC	Date: 5/14/2024
Approved By: _____	Date: _____	Approved By: _____	Date: 5/14/2024

SECTION F: Certificate to Operate

COMPLETION OF WORKS

This source of air contamination has been constructed or modified in accordance with the Westchester County Department of Health Certificates of Approval and Approval of Plans or approved revisions thereto.

Professional Engineer Seal

Professional Engineer Signature — Date: 2/15/24

Owners Signature — Date: 2/6/2024

rev. 12/19

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

1. NAME OF OWNER/FIRM			2. NAME OF PROFESSIONAL ENGINEER		9. TELEPHONE	18. FACILITY NAME	
Mures Alexander, LLC			Robert Jackson, P.E.		(973) 738-0782	Glenwood Container Site	
2. NUMBER AND STREET ADDRESS			10. NUMBER AND STREET ADDRESS			19. FACILITY LOCATION (# & ST. ADDRESS)	
214 Starr Street, 2nd Floor			55 Lane Road Suite 407			72 Alexander Street	
3. CITY/TOWN/VILLAGE	4. STATE	5. ZIP	11. CITY/TOWN/VILLAGE	12. STATE	13. ZIP	20. CITY/TOWN/VILLAGE	21. ZIP
Brooklyn	NY	11237	Fairfield	NJ	07004	Yonkers	10701
			14. NYSPE STAMP/SEAL	15. NYSPE LICENSE #	16. DATE OF SIGNATURE	22. BUILDING NAME OR NO.	23. START UP DATE
				060372	2/15/24	Glenwood Container Site BCP Site Number: C360154	02 / 2024 MO YR
6. NAME & TITLE OF OWNERS REP.		7. TEL. #	17. SIGNATURE OF PROFESSIONAL ENGINEER WHEN APPLYING FOR A PERMIT TO CONSTRUCT			24. DRAWING NUMBERS OF PLANS SUBMITTED	
Ioan Sita Property Owner		(215) 409-5312					

25. EMISSION POINT NO.	26. GROUND ELEV(FT.)	27. HEIGHT ABOVE STRUCTURES (FT)	28. STACK HGT.(FT)	29. INSIDE DIMEN.(IN)	30. EXIT TEMP.(°F)	31. EXIT VELOCITY (FT./SEC.)	32. EXIT FLOW RATE (ACFM)		
EP-02	7	3	18'4"	4	70	4.77	125		

33. PERMIT TO CONSTRUCT	34. CERTIFICATE TO OPERATE	35. % OPERATION BY SEASON				36. HRS./DAY	37. DAYS/YR.
A. ☒ NEW SOURCE B. ☐ MODIFICATION	A. ☒ NEW SOURCE C. ☐ EXISTING SOURCE B. ☐ MODIFICATION	WINTER	SPRING	SUMMER	FALL		
		25% /	25% /	25% /	25% /	24/7	365

38. DESCRIBE PROCESS OR UNIT		
	1. Active SSDS mitigation systems employ specialized fans to exhaust vapors from underneath building structures via a sealed pipe system. These	2.
	3. systems are designed to remove vapors before it migrates into the building envelope.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A	N/A	Fantech RN Series 4EC-4 Inline Radon Fan	N/A	02/2024	N/A

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/HR)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^3
Dichlorodifluoromethane	75-69-4	1.87	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Ethanol	64-17-5	315	ug/m3	9	N/A	0.00003	0.00003	0.26	0
Acetone	67-64-1	504	ug/m3	9	N/A	0.00005	0.00005	0.41	0
Trichlorofluoromethane	75-69-4	2.38	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Isopropanol	67-63-0	53.1	ug/m3	9	N/A	0.000002	0.000002	0.04	0
Tertiary butyl Alcohol	75-65-0	9.76	ug/m3	9	N/A	0.0000009	0.0000009	0.01	0
Carbon disulfide	75-15-0	3.77	ug/m3	9	N/A	0.0000004	0.0000004	0.003	0
1,1-Dichloroethane	75-34-3	37.2	ug/m3	9	N/A	0.000003	0.000003	0.03	0
2-Butanone	78-93-3	12.7	ug m3	9	N/A	0.000001	0.000001	0.01	0
Chloroform	67-66-3	85	ug/m3	9	N/A	0.0000079	0.0000079	0.069	0
n-Hexane	110-54-3	1.34	ug m3	9	N/A	0.0000001	0.0000001	0.001	0
1,1,1-Trichloroethane	71-55-6	35700	ug/m3	9	N/A	0.00332	0.00332	29.10	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative	55. Signature of Authorized Representative of Agent	Date
THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.		2/6/24

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

38. DESCRIBE PROCESS OR UNIT	1.	2.
	3.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A					

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/Hr)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^6
Benzene	71-43-2	2.69	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
Cyclohexane	110-82-7	2.11	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Heptane	142-82-5	1.37	ug/m3	9	N/A	0.0000001	0.0000001	0.001	0
Toluene	108-88-3	18.7	ug/m3	9	N/A	0.000002	0.000002	0.02	0
Tetrachloroethene	127-18-4	321	ug/m3	9	N/A	0.00003	0.00003	0.26	0
p/m-Xylene	179601-23-1	2.84	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
o-Xylene	95-47-6	2.15	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
1,2,4-Trimethylbenzene	95-63-6	1.64	ug/m3	9	N/A	0.0000002	0.0000002	0.001	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative	55. Signature of Authorized Representative of Agent	Date
THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.		2/6/2024

FORM A

Westchester County Department of Health
Bureau of Environmental Quality
25 Moore Avenue
Mount Kisco, NY 10549

APPLICATION FOR A PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

SECTION A:

1. OWNER OF FACILITY: Mures Alexander, LLC Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
2. OWNER ADDRESS (#, Street,City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
3. FACILITY NAME: Glenwood Container Site - BCP Site Number: C360154 Telephone:
4. FACILITY ADDRESS: 72 Alexander Street, Yonkers, NY 10701
5. AUTHORIZED AGENT: Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
6. ADDRESS (#, Street, City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
7. INSTALLER or CONTRACTOR Renova Environmental Company Telephone: : (732) 659-1000
8. ADDRESS : 3417 Sunset Ave., Ocean Twp., NJ 07712

SECTION B:

EMISSION POINT: EP-03 PERMIT NUMBER: 52-9979 (CTO)
(to be filled in by agency)

DESCRIPTION OF PROCESS: (include existing, new or modified equipment):

Existing active SSDS mitigation system employs specialized fans to exhaust vapors from underneath building structure via an existing sealed pipe system. These systems are designed to remove vapors before it migrates into the building envelope.

SECTION C:

AIR POLUTION CONTROL EQUIPMENT DESCRIPTION:

N/A

SECTION D:

DESIGN DATA

Attach one (1) original Westchester County Department of Health Application Form B1 or Form B2.

SECTION E:

Submit two (2) copies of a complete set of plans for this construction bearing original Professional Engineer seal and signature, drawing ID number and date.

This Application is submitted in accordance with the provisions of Chapter 873 Article XIII, Section 873.1303.1 of the Laws of Westchester County.

Owners Signature — Date: 2/6/24

Professional Engineer — Date: 2/15/24

Professional Engineer Seal/Stamp

DO NOT WRITE BENEATH THIS LINE:

PERMIT TO CONSTRUCT		CERTIFICATE TO OPERATE	
Reviewer:	Date:	Reviewer:	Date: 5/14/2024
Recommended For Approval:	Date:	Recommended For Approval:	Date: 5/14/2024
Approved By:	Date:	Approved By:	Date: 5/14/2024

SECTION F: Certificate to Operate

COMPLETION OF WORKS

This source of air contamination has been constructed or modified in accordance with the Westchester County Department of Health Certificates of Approval and Approval of Plans or approved revisions thereto.

Professional Engineer Seal

Professional Engineer Signature — Date: 2/15/24

Owners Signature — Date: 2/6/2024

rev. 12/19

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

1. NAME OF OWNER/FIRM			2. NAME OF PROFESSIONAL ENGINEER		9. TELEPHONE	18. FACILITY NAME	
Mures Alexander, LLC			Robert Jackson, P.E.		(973) 738-0782	Glenwood Container Site	
2. NUMBER AND STREET ADDRESS			10. NUMBER AND STREET ADDRESS			19. FACILITY LOCATION (# & ST. ADDRESS)	
214 Starr Street, 2nd Floor			55 Lane Road Suite 407			72 Alexander Street	
3. CITY/TOWN/VILLAGE	4. STATE	5. ZIP	11. CITY/TOWN/VILLAGE	12. STATE	13. ZIP	20. CITY/TOWN/VILLAGE	21. ZIP
Brooklyn	NY	11237	Fairfield	NJ	07004	Yonkers	10701
			14. NYSPE STAMP/SEAL	15. NYSPE LICENSE #	16. DATE OF SIGNATURE	22. BUILDING NAME OR NO. Glenwood Container Site BCP Site Number: C360154	23. START UP DATE 02 / 2024 MO YR
				L-060772	2/5/24		
6. NAME & TITLE OF OWNERS REP.		7. TEL. #	17. SIGNATURE OF PROFESSIONAL ENGINEER WHEN APPLYING FOR A PERMIT TO CONSTRUCT			24. DRAWING NUMBERS OF PLANS SUBMITTED	
Ioan Sita Property Owner		(215) 409-5312					

25. EMISSION POINT NO.	26. GROUND ELEV(FT.)	27. HEIGHT ABOVE STRUCTURES (FT.)	28. STACK HGT.(FT)	29. INSIDE DIMEN.(IN)	30. EXIT TEMP.(°F)	31. EXIT VELOCITY (FT./SEC.)	32. EXIT FLOW RATE (ACFM)		
EP-03	7	3	18' 11"	4	70	4.77	125		

33. PERMIT TO CONSTRUCT	34. CERTIFICATE TO OPERATE	35. % OPERATION BY SEASON				36. HRS./DAY	37. DAYS/YR.
A. ☒ NEW SOURCE B. ☐ MODIFICATION	A. ☒ NEW SOURCE C. ☐ EXISTING SOURCE B. ☐ MODIFICATION	WINTER	SPRING	SUMMER	FALL		
		25% /	25% /	25% /	25% /	24/7	365

38. DESCRIDE PROCESS OR UNIT		
	1. Active SSDS mitigation systems employ specialized fans to exhaust vapors from underneath building structures via a sealed pipe system. These	2.
	3. systems are designed to remove vapors before it migrates into the building envelope.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A	N/A	Fantech RN Series 4EC-4 Inline Radon Fan	N/A	02/2024	N/A

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/HR)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^
Dichlorodifluoromethane	75-69-4	1.87	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Ethanol	64-17-5	315	ug/m3	9	N/A	0.00003	0.00003	0.26	0
Acetone	67-64-1	504	ug/m3	9	N/A	0.00005	0.00005	0.41	0
Trichlorofluoromethane	75-69-4	2.38	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Isopropanol	67-63-0	53.1	ug/m3	9	N/A	0.000002	0.000002	0.04	0
Tertiary butyl Alcohol	75-65-0	9.76	ug/m3	9	N/A	0.0000009	0.0000009	0.01	0
Carbon disulfide	75-15-0	3.77	ug/m3	9	N/A	0.0000004	0.0000004	0.003	0
1,1-Dichloroethane	75-34-3	37.2	ug/m3	9	N/A	0.000003	0.000003	0.03	0
2-Butanone	78-93-3	12.7	ug/m3	9	N/A	0.000001	0.000001	0.01	0
Chloroform	67-66-3	85	ug/m3	9	N/A	0.0000079	0.0000079	0.069	0
n-Hexane	110-54-3	1.34	ug m3	9	N/A	0.0000001	0.0000001	0.001	0
1,1,1-Trichloroethane	71-55-6	35700	ug/m3	9	N/A	0.00332	0.00332	29.10	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative

THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.

55. Signature of Authorized Representative of Agent

Date 2/6/2024

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

38. DESCRIBE PROCESS OR UNIT	1.	2.
	3.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A					

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/Hr)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^x
Benzene	71-43-2	2.69	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
Cyclohexane	110-82-7	2.11	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Heptane	142-82-5	1.37	ug/m3	9	N/A	0.0000001	0.0000001	0.001	0
Toluene	108-88-3	18.7	ug/m3	9	N/A	0.000002	0.000002	0.02	0
Tetrachloroethene	127-18-4	321	ug/m3	9	N/A	0.00003	0.00003	0.26	0
p/m-Xylene	179601-23-1	2.84	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
o-Xylene	95-47-6	2.15	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
1,2,4-Trimethylbenzene	95-63-6	1.64	ug/m3	9	N/A	0.0000002	0.0000002	0.001	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative	55. Signature of Authorized Representative of Agent	Date
THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.		2/6/24

FORM A

Westchester gov.com

Westchester County Department of Health
Bureau of Environmental Quality
25 Moore Avenue
Mount Kisco, NY 10549

APPLICATION FOR A PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

SECTION A:

1. OWNER OF FACILITY: Mures Alexander, LLC Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
2. OWNER ADDRESS (#, Street,City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
3. FACILITY NAME: Glenwood Container Site - BCP Site Number: C360154 Telephone:
4. FACILITY ADDRESS: 72 Alexander Street, Yonkers, NY 10701
5. AUTHORIZED AGENT: Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
6. ADDRESS (#, Street, City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
7. INSTALLER or CONTRACTOR Renova Environmental Company Telephone: : (732) 659-1000
8. ADDRESS : 3417 Sunset Ave., Ocean Twp., NJ 07712

SECTION B:

EMISSION POINT: EP-04 PERMIT NUMBER: 52-9980 (UTS)
(to be filled in by agency)

DESCRIPTION OF PROCESS: (include existing, new or modified equipment):

Existing active SSDS mitigation system employs specialized fans to exhaust vapors from underneath building structure via an existing sealed pipe system. These systems are designed to remove vapors before it migrates into the building envelope.

SECTION C:

AIR POLUTION CONTROL EQUIPMENT DESCRIPTION:

N/A

SECTION D:

DESIGN DATA

Attach one (1) original Westchester County Department of Health Application Form B1 or Form B2.

SECTION E:

Submit two (2) copies of a complete set of plans for this construction bearing original Professional Engineer seal and signature, drawing ID number and date.

This Application is submitted in accordance with the provisions of Chapter 873 Article XIII, Section 873.1303.1 of the Laws of Westchester County.

Owners Signature 2/6/24 Date

Professional Engineer 2/15/24 Date

Professional Engineer Seal/Stamp

DO NOT WRITE BENEATH THIS LINE:

PERMIT TO CONSTRUCT			CERTIFICATE TO OPERATE		
Reviewer:		Date:	Reviewer:		Date: 5/14/2024
Recommended For Approval:		Date:	Recommended For Approval:		Date: 5/14/2024
Approved By:		Date:	Approved By:		Date: 5/14/2024

SECTION F: Certificate to Operate

COMPLETION OF WORKS

This source of air contamination has been constructed or modified in accordance with the Westchester County Department of Health Certificates of Approval and Approval of Plans or approved revisions thereto.

Professional Engineer Seal

Professional Engineer Signature 2/15/24 Date

Owners Signature 2/6/24 Date

rev. 12/19

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

1. NAME OF OWNER/FIRM			2. NAME OF PROFESSIONAL ENGINEER		9. TELEPHONE	18. FACILITY NAME	
Mures Alexander, LLC			Robert Jackson, P.E.		(973) 738-0782	Glenwood Container Site	
2. NUMBER AND STREET ADDRESS			10. NUMBER AND STREET ADDRESS			19. FACILITY LOCATION (# & ST. ADDRESS)	
214 Starr Street, 2nd Floor			55 Lane Road Suite 407			72 Alexander Street	
3. CITY/TOWN/VILLAGE	4. STATE	5. ZIP	11. CITY/TOWN/VILLAGE	12. STATE	13. ZIP	20. CITY/TOWN/VILLAGE	21. ZIP
Brooklyn	NY	11237	Fairfield	NJ	07004	Yonkers	10701
			14. NYSPE STAMP/SEAL	15. NYSPE LICENSE #	16. DATE OF SIGNATURE	22. BUILDING NAME OR NO.	23. START UP DATE
				160372	2/15/24	Glenwood Container Site BCP Site Number: C360154	02 / 2024 MO YR
6. NAME & TITLE OF OWNERS REP.		7. TEL. #	17. SIGNATURE OF PROFESSIONAL ENGINEER WHEN APPLYING FOR A PERMIT TO CONSTRUCT			24. DRAWING NUMBERS OF PLANS SUBMITTED	
Ioan Sita Property Owner		(215) 409-5312					

25. EMISSION POINT NO.	26. GROUND ELEV(FT.)	27. HEIGHT ABOVE STRUCTURES (FT)	28. STACK HGT (FT)	29. INNER DIMEN.(IN)	30. EXIT TEMP (°F)	31. EXIT VELOCITY (FT./SEC.)	32. EXIT FLOW RATE (ACFM)		
EP-04	7	3	18'2"	4	70	4.77	125		

33. PERMIT TO CONSTRUCT	34. CERTIFICATE TO OPERATE	35. % OPERATION BY SEASON				36. HRS./DAY	37. DAYS/YR.
A. ☒ NEW SOURCE B. ☐ MODIFICATION	A. ☒ NEW SOURCE C. ☐ EXISTING SOURCE B. ☐ MODIFICATION	WINTER	SPRING	SUMMER	FALL		
		25% /	25% /	25% /	25% /	24/7	365

38. DESCRIBE PROCESS OR UNIT		
	1. Active SSDS mitigation systems employ specialized fans to exhaust vapors from underneath building structures via a sealed pipe system. These	2.
	3. systems are designed to remove vapors before it migrates into the building envelope.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A	N/A	Fantech RN Series 4EC-4 Inline Radon Fan	N/A	02/2024	N/A

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/HR)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^x
Dichlorodifluoromethane	75-69-4	1.87	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Ethanol	64-17-5	315	ug/m3	9	N/A	0.00003	0.00003	0.26	0
Acetone	67-64-1	504	ug/m3	9	N/A	0.00005	0.00005	0.41	0
Trichlorofluoromethane	75-69-4	2.38	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Isopropanol	67-63-0	53.1	ug/m3	9	N/A	0.000002	0.000002	0.04	0
Tertiary butyl Alcohol	75-65-0	9.76	ug/m3	9	N/A	0.0000009	0.0000009	0.01	0
Carbon disulfide	75-15-0	3.77	ug/m3	9	N/A	0.0000004	0.0000004	0.003	0
1,1-Dichloroethane	75-34-3	37.2	ug/m3	9	N/A	0.000003	0.000003	0.03	0
2-Butanone	78-93-3	12.7	ug/m3	9	N/A	0.000001	0.000001	0.01	0
Chloroform	67-66-3	85	ug/m3	9	N/A	0.0000079	0.0000079	0.069	0
n-Hexane	110-54-3	1.34	ug/m3	9	N/A	0.0000001	0.0000001	0.001	0
1,1,1-Trichloroethane	71-55-6	35700	ug/m3	9	N/A	0.00332	0.00332	29.10	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative

THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.

55. Signature of Authorized Representative of Agent

Date 2/6/24

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

38. DESCRIBE PROCESS OR UNIT	1.	2.
	3.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A					

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/Hr)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^{X}
Benzene	71-43-2	2.69	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
Cyclohexane	110-82-7	2.11	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Heptane	142-82-5	1.37	ug/m3	9	N/A	0.0000001	0.0000001	0.001	0
Toluene	108-88-3	18.7	ug/m3	9	N/A	0.000002	0.000002	0.02	0
Tetrachloroethene	127-18-4	321	ug/m3	9	N/A	0.00003	0.00003	0.26	0
p/m-Xylene	179601-23-1	2.84	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
o-Xylene	95-47-6	2.15	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
1,2,4-Trimethylbenzene	95-63-6	1.64	ug/m3	9	N/A	0.0000002	0.0000002	0.001	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative	55. Signature of Authorized Representative of Agent	Date
THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.		2/6/24

FORM A

Westchester County Department of Health
Bureau of Environmental Quality
25 Moore Avenue
Mount Kisco, NY 10549

APPLICATION FOR A PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE A SOURCE OF AIR CONTAMINATION

SECTION A:

1. OWNER OF FACILITY: Mures Alexander, LLC Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
2. OWNER ADDRESS (#, Street,City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
3. FACILITY NAME: Glenwood Container Site - BCP Site Number: C360154 Telephone:
4. FACILITY ADDRESS: 72 Alexander Street, Yonkers, NY 10701
5. AUTHORIZED AGENT: Ioan Sita Email: ioan.sita@starrwin.com Telephone: (516) 860-8609
6. ADDRESS (#, Street, City,State & Zip): 214 Starr Street, 2nd Floor, Brooklyn, NY 11237
7. INSTALLER or CONTRACTOR Renova Environmental Company Telephone: : (732) 659-1000
8. ADDRESS : 3417 Sunset Ave., Ocean Twp., NJ 07712

SECTION B:

EMISSION POINT: EP-05 PERMIT NUMBER: S2-9981 (CTO)
(to be filled in by agency)

DESCRIPTION OF PROCESS: (include existing, new or modified equipment):

Existing active SSDS mitigation system employs specialized fans to exhaust vapors from underneath building structure via an existing sealed pipe system. These systems are designed to remove vapors before it migrates into the building envelope.

SECTION C:

AIR POLUTION CONTROL EQUIPMENT DESCRIPTION:

N/A

SECTION D:

DESIGN DATA

Attach one (1) original Westchester County Department of Health Application Form B1 or Form B2.

SECTION E:

Submit two (2) copies of a complete set of plans for this construction bearing original Professional Engineer seal and signature, drawing ID number and date.

This Application is submitted in accordance with the provisions of Chapter 873 Article XIII, Section 873.1303.1 of the Laws of Westchester County.

Owners Signature — Date: 2/6/2024

Professional Engineer — Date: 2/15/24

Professional Engineer Seal/Stamp

DO NOT WRITE BENEATH THIS LINE:

PERMIT TO CONSTRUCT		CERTIFICATE TO OPERATE	
Reviewer:	Date:	Reviewer:	Date: 5/14/2024
Recommended For Approval:	Date:	Recommended For Approval:	Date: 5/14/2024
Approved By:	Date:	Approved By:	Date: 5/14/2024

SECTION F: Certificate to Operate

COMPLETION OF WORKS

This source of air contamination has been constructed or modified in accordance with the Westchester County Department of Health Certificates of Approval and Approval of Plans or approved revisions thereto.

Professional Engineer Seal

Professional Engineer Signature — Date: 2/15/24

Owners Signature — Date: 2/6/2024

rev. 12/19

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

1. NAME OF OWNER/FIRM	2. NAME OF PROFESSIONAL ENGINEER	9. TELEPHONE	18. FACILITY NAME
Mures Alexander, LLC	Robert Jackson, P.E.	(973) 738-0782	Glenwood Container Site

2. NUMBER AND STREET ADDRESS	10. NUMBER AND STREET ADDRESS	19. FACILITY LOCATION (# & ST. ADDRESS)
214 Starr Street, 2nd Floor	55 Lane Road Suite 407	72 Alexander Street

3. CITY/TOWN/VILLAGE	4. STATE	5. ZIP	11. CITY/TOWN/VILLAGE	12. STATE	13. ZIP	20. CITY/TOWN/VILLAGE	21. ZIP
Brooklyn	NY	11237	Fairfield	NJ	07004	Yonkers	10701

	14. NYSPE STAMP/SEAL	15. NYSPE LICENSE #	16. DATE OF SIGNATURE	22. BUILDING NAME OR NO.	23. START UP DATE
		160372	2/15/24	Glenwood Container Site BCP Site Number: C360154	02 / 2024 MO YR

6. NAME & TITLE OF OWNERS REP.	7. TEL. #	17. SIGNATURE OF PROFESSIONAL ENGINEER WHEN APPLYING FOR A PERMIT TO CONSTRUCT	24. DRAWING NUMBERS OF PLANS SUBMITTED
Inan Sita Property Owner	(215) 409-5512		

25. EMISSION POINT NO	26. GROUND ELEV(FT.)	27. HEIGHT ABOVE STRUCTURES (FT)	28. STACK HGT (FT.)	29. INSIDE DIMENTN	30. EXIT TEMP (°F)	31. EXIT VELOCITY (FT./SEC.)	32. EXIT FLOW RATE (ACFM)		
EP-05	7	3	17' 10"	4	70	4.77	125		

33. PERMIT TO CONSTRUCT	34. CERTIFICATE TO OPERATE	35. % OPERATION BY SEASON				36. HRS./DAY	37. DAYS/YR.
		WINTER	SPRING	SUMMER	FALL		
A. ☒ NEW SOURCE B. ☐ MODIFICATION	A. ☒ NEW SOURCE C. ☐ EXISTING SOURCE B. ☐ MODIFICATION	25% /	25% /	25% /	25% /	24/7	365

38. DESCRIBE PROCESS OR UNIT		
	1. Active SSDS mitigation systems employ specialized fans to exhaust vapors from underneath building structures via a sealed pipe system. These	2.
	3. systems are designed to remove vapors before it migrates into the building envelope.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A	N/A	Fantech RN Series 4EC-4 Inline Radon Fan	N/A	02/2024	N/A

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/HR)	ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^{X}
Dichlorodifluoromethane	75-69-4	1.87	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Ethanol	64-17-5	315	ug/m3	9	N/A	0.00003	0.00003	0.26	0
Acetone	67-64-1	504	ug/m3	9	N/A	0.00005	0.00005	0.41	0
Trichlorofluoromethane	75-69-4	2.38	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
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Tertiary butyl Alcohol	75-65-0	9.76	ug/m3	9	N/A	0.0000009	0.0000009	0.01	0
Carbon disulfide	75-15-0	3.77	ug/m3	9	N/A	0.0000004	0.0000004	0.003	0
1,1-Dichloroethane	75-34-3	37.2	ug/m3	9	N/A	0.000003	0.000003	0.03	0
2-Butanone	78-93-3	12.7	ug/m3	9	N/A	0.000001	0.000001	0.01	0
Chloroform	67-66-3	85	ug/m3	9	N/A	0.0000079	0.0000079	0.069	0
n-Hexane	110-54-3	1.34	ug m3	9	N/A	0.0000001	0.0000001	0.001	0
1,1,1-Trichloroethane	71-55-6	35700	ug/m3	9	N/A	0.00332	0.00332	29.10	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative

THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.

55. Signature of Authorized Representative of Agent

Date 2/6/24

4/13/2010

FORM B1

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL QUALITY

PROCESS, EXHAUST OR VENTILATION SYSTEM

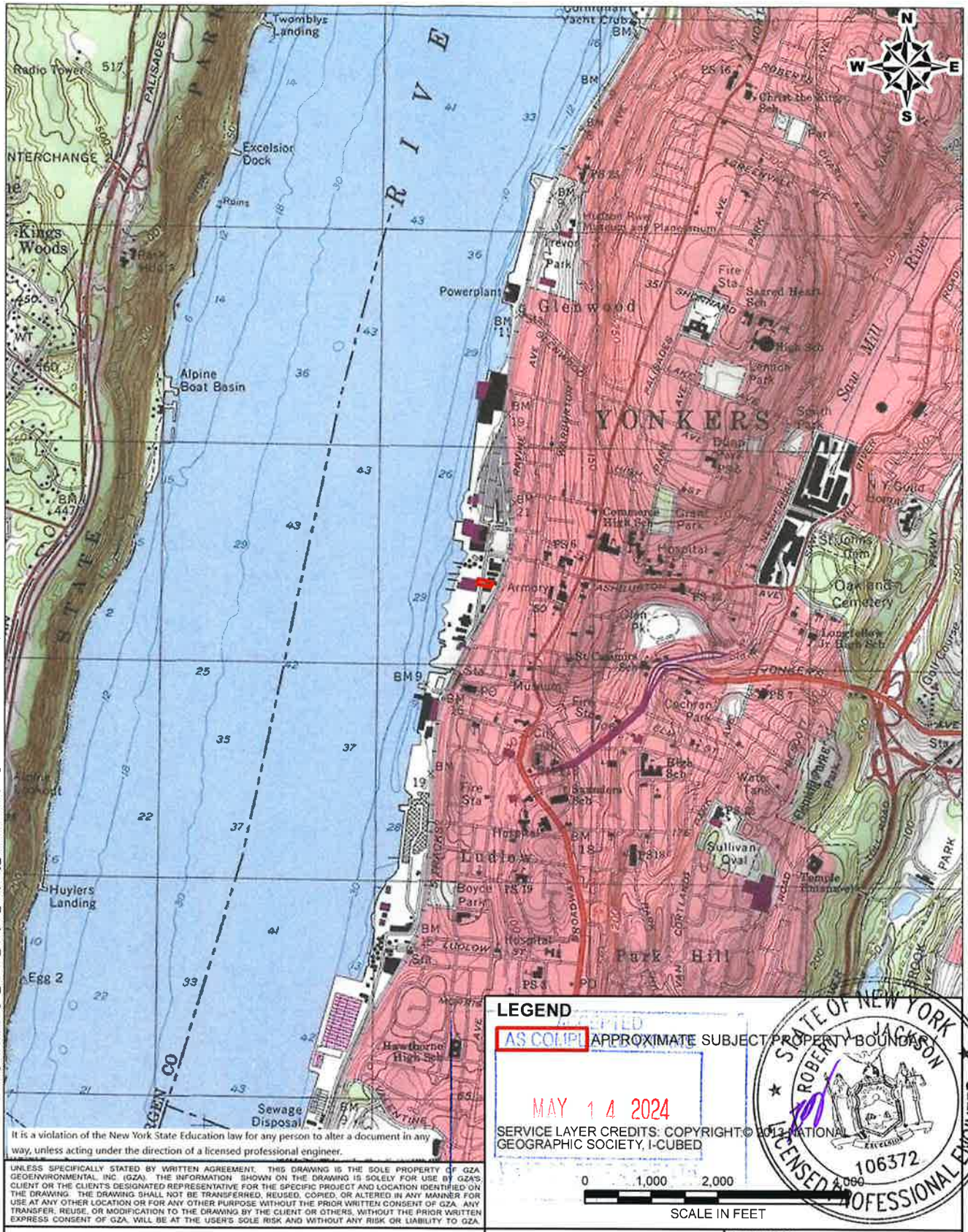
APPLICATION FOR PERMIT TO CONSTRUCT OR CERTIFICATE TO OPERATE

38. DESCRIBE PROCESS OR UNIT	1.	2.
	3.	4.
	5.	6.
	7.	8.

39. EMISSION CONTROL EQUIPMENT I.D.	40. CONTROL TYPE	41. MANUFACTURER'S NAME AND MODEL NUMBER	42. DISPOSAL METHOD	43. DATE INSTALLED MONTH/YEAR	44. USEFUL LIFE
N/A					

CONTAMINANT		EMISSIONS			50. % CONTROL EFFICIENCY	HOURLY EMISSIONS (LBS/Hr)		ANNUAL EMISSIONS (LBS/YR)	
45. NAME	46. CAS NUMBER	47. ACTUAL	48. UNIT	49. HOW DET.		51. ERP	52. ACTUAL	53. ACTUAL	54. 10^X
Benzene	71-43-2	2.69	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
Cyclohexane	110-82-7	2.11	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
Heptane	142-82-5	1.37	ug/m3	9	N/A	0.0000001	0.0000001	0.001	0
Toluene	108-88-3	18.7	ug/m3	9	N/A	0.000002	0.000002	0.02	0
Tetrachloroethene	127-18-4	321	ug/m3	9	N/A	0.00003	0.00003	0.26	0
p/m-Xylene	179601-23-1	2.84	ug/m3	9	N/A	0.0000003	0.0000003	0.002	0
o-Xylene	95-47-6	2.15	ug/m3	9	N/A	0.0000002	0.0000002	0.002	0
1,2,4-Trimethylbenzene	95-63-6	1.64	ug/m3	9	N/A	0.0000002	0.0000002	0.001	0

Upon completion of construction sign the statement listed below and forward to the appropriate filed representative	55. Signature of Authorized Representative of Agent	Date
THE PROCESS EXHAUST OR VENTILATION SYSTEM HAS BEEN CONSTRUCTED AND WILL BE OPERATED IN ACCORDANCE WITH STATED SPECIFICATIONS AND IN CONFORMANCE WITH ALL PROVISIONS OF EXISTING REGULATIONS.		2/6/24



It is a violation of the New York State Education law for any person to alter a document in any way, unless acting under the direction of a licensed professional engineer.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

LEGEND

APPROXIMATE SUBJECT PROPERTY BOUNDARY

ACCEPTED AS COMPLETED

MAY 14 2024

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0 1,000 2,000 4,000

SCALE IN FEET

STATE OF NEW YORK ROBERT JACKSON 106372 LICENSED PROFESSIONAL ENGINEER

MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

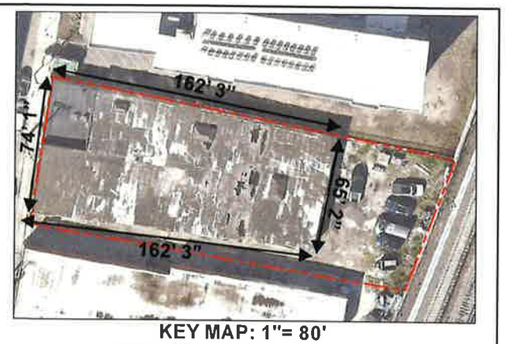
SUBJECT PROPERTY LOCATION MAP
AS BUILT

PREPARED BY:
GZA GeoEnvironmental, Inc.
www.gza.com

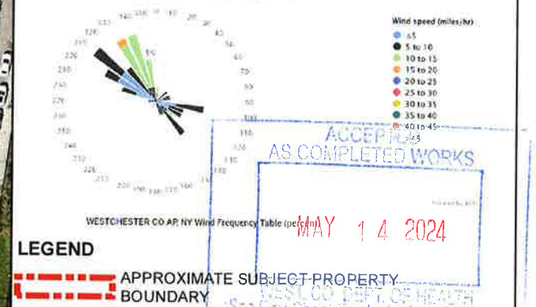
PREPARED FOR:
MURES ALEXANDER LLC
214 STARR ST.
YONKERS, NY 11237

PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: OW	FIGURE
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1" = 2,000 FEET	1
DATE: 08/17/2023	PROJECT NO: 12.0077558.00	REVISION NO:	

© 2023 - GZA GeoEnvironmental, Inc.
J:\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\Fig-1_USGS_Subject_Property_Location.mxd, August 17, 2023 - 2:55:48 PM, Miranda.Bandeli



KEY MAP: 1"= 80'



ACCEPTED AS COMPLETED WORKS
MAY 14 2024
WESTCHESTER CO DEPT OF HEALTH

LEGEND

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- POTENTIAL RECEPTOR PROPERTY BOUNDARY
- POTENTIAL RECPTOR PROPERTY BOUNDARY REGARDLESS OF WIND DIRECTION
- APPROXIMATE EMMISION POINT LOCATION
- PREVAILING WIND ARROW

NOTES:
1. SEE ENGINEERING REPORT SECTION 5.2 - WIND DIRECTIONS FOR RECEPTORS AND RECEPTORS DISTANCES FROM EMISSION POINTS 01 - 05.
2. IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER A DOCUMENT IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER.

SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, (C) OPENSTREETMAP CONTRIBUTORS. AERIAL IMAGERY COPYRIGHT 2023 NEARMAP, HERE. CAPTURED SEPTEMBER 6, 2023.

0 50 100 200
SCALE IN FEET

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MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

SITE PLAN VIEW
AS BUILT

ENGINEERING SEAL
ROBERT M. JASON
106372
LICENSED PROFESSIONAL ENGINEER

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. www.gza.com		MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237	
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: DW	FIGURE 2A
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1" = 100 FEET	
DATE: 12/11/2023	PROJECT NO: 12.0077558.00	REVISION NO:	SHEET NO: 01 OF 02

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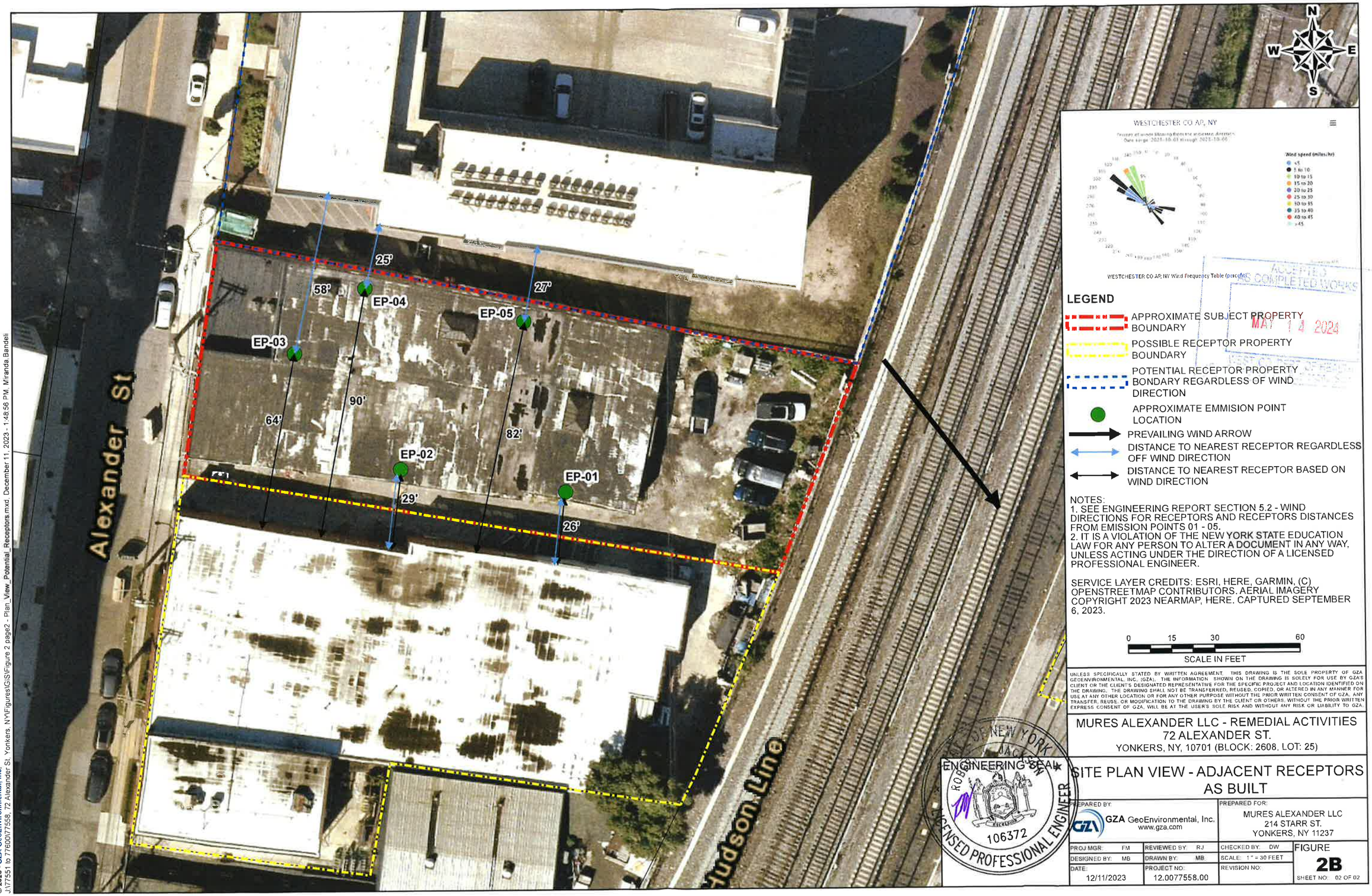
J:\77551 to 77600\77558, 72 Alexander St, Yonkers, NY\Figures\GIS\Figure 2 - Plan_View_Potential_Receptors-rev1.mxd December 11, 2023 - 12:45:26 PM, Miranda Bandeli



WESTCHESTER CO AP, NY

WESTCHESTER CO AP, NY Wind Frequency Table (percent)

LEGEND

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- POSSIBLE RECEPTOR PROPERTY BOUNDARY
- POTENTIAL RECEPTOR PROPERTY BONDARY REGARDLESS OF WIND DIRECTION
- APPROXIMATE EMMISION POINT LOCATION
- PREVAILING WIND ARROW
- DISTANCE TO NEAREST RECEPTOR REGARDLESS OFF WIND DIRECTION
- DISTANCE TO NEAREST RECEPTOR BASED ON WIND DIRECTION

NOTES:
1. SEE ENGINEERING REPORT SECTION 5.2 - WIND DIRECTIONS FOR RECEPTORS AND RECEPTORS DISTANCES FROM EMISSION POINTS 01 - 05.
2. IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER A DOCUMENT IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER.

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0 15 30 60
SCALE IN FEET

ACCEPTED AS COMPLETED WORKS
MAY 14 2024
WESTCHESTER COUNTY DEPARTMENT OF PUBLIC WORKS

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

STATE OF NEW YORK
ROSS JACKSON
ENGINEERING SEAL
106372
LICENSED PROFESSIONAL ENGINEER

MURES ALEXANDER LLC - REMEDIAL ACTIVITIES
72 ALEXANDER ST.
YONKERS, NY, 10701 (BLOCK: 2608, LOT: 25)

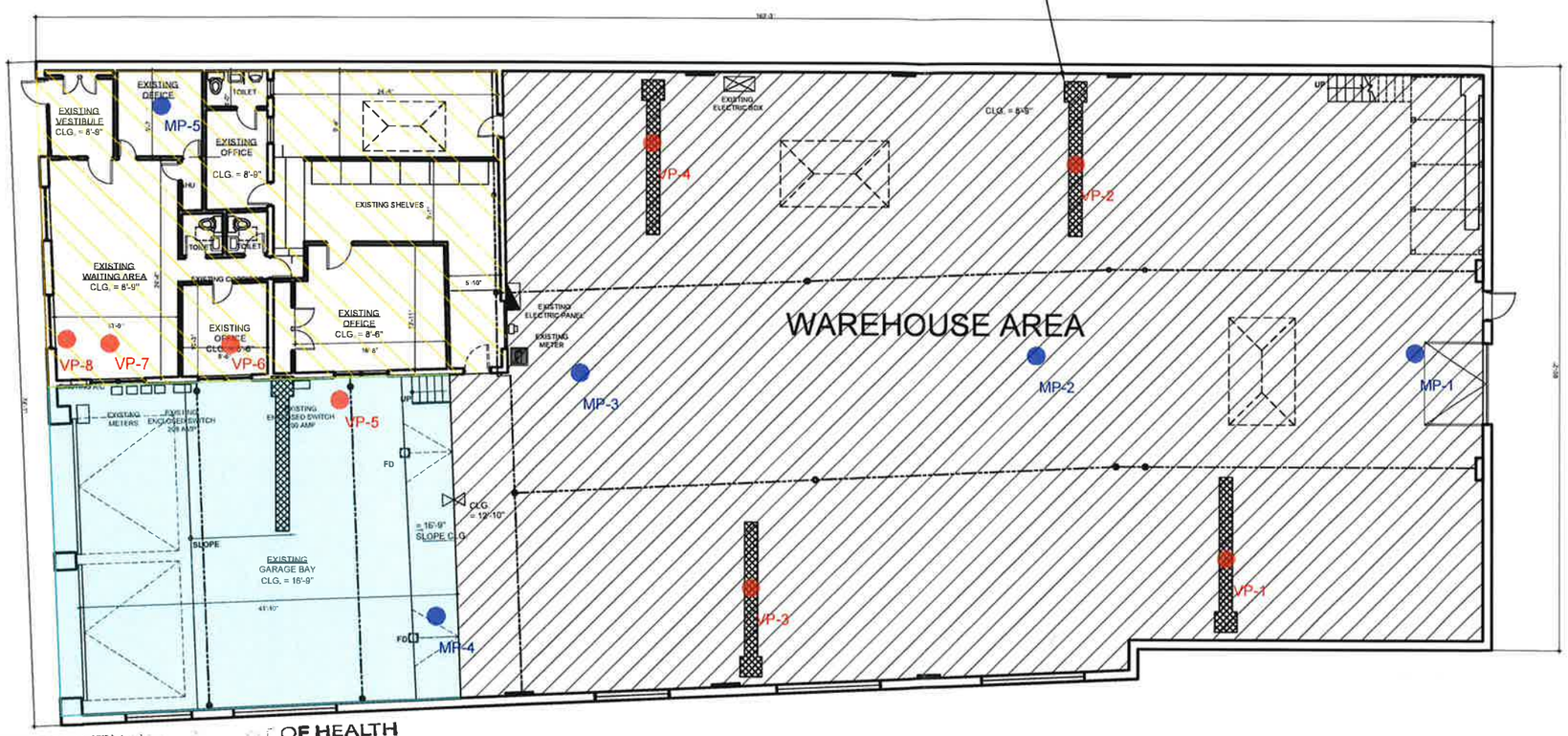
SITE PLAN VIEW - ADJACENT RECEPTORS AS BUILT

PREPARED BY: GZA GeoEnvironmental, Inc. www.gza.com			PREPARED FOR: MURES ALEXANDER LLC 214 STARR ST. YONKERS, NY 11237
PROJ MGR: FM	REVIEWED BY: RJ	CHECKED BY: DW	FIGURE 2B
DESIGNED BY: MB	DRAWN BY: MB	SCALE: 1" = 30 FEET	
DATE: 12/11/2023	PROJECT NO: 12.0077558.00	REVISION NO:	SHEET NO: 02 OF 02

© 2023 - GZA GeoEnvironmental, Inc.
J:\77551 to 77600\77558_72 Alexander St, Yonkers, NY\Figures\GIS\Figure 2 page2 - Plan_View_Potential_Receptors.mxd, December 11, 2023 - 1:48:56 PM, Miranda.Bandeli

SSDS TRENCH

NOT DRAWN TO SCALE



WESTCHESTER COUNTY DEPARTMENT OF HEALTH
Bureau of Environmental Quality

This plan is accepted for the issuance of the original CERTIFICATE TO OPERATE an AIR CONTAMINATION SOURCE pursuant to Article XIII of the Westchester County Sanitary Code, subject to provisions of the Certificate to Operate issued this date.

Certificate to Operate Number: 52-9977, 52-9978, 52-9979, 52-9980, 52-9981

Recommended by: _____ Date 5/14/2024

Approved by: _____ Date 5/14/2024

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LEGEND

- MONITORING POINT
- VAPOR POINT
- RETRO-COAT SYSTEM (OFFICE/SHELF AREA)
- GARAGE BAY AREA
- 3" TO 5" CONCRETE

PREPARED BY:

Equity Environmental Engineering LLC
A Division of GZA

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NO.	DATE	DESCRIPTION

PROJECT:
SSDS LAYOUT AS BUILT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

DESIGN BY:	RJ	04/24/2023
DRAWN BY:	JV	04/24/2023
CHECKED BY:	RJ	04/24/2023
FINAL CK BY:	RJ	02/05/2024

PROJECT NO.: 12.0077558.00

DRAWING TITLE:
COMMUNICATION TESTING SAMPLE LOCATION LAYOUT AS BUILT

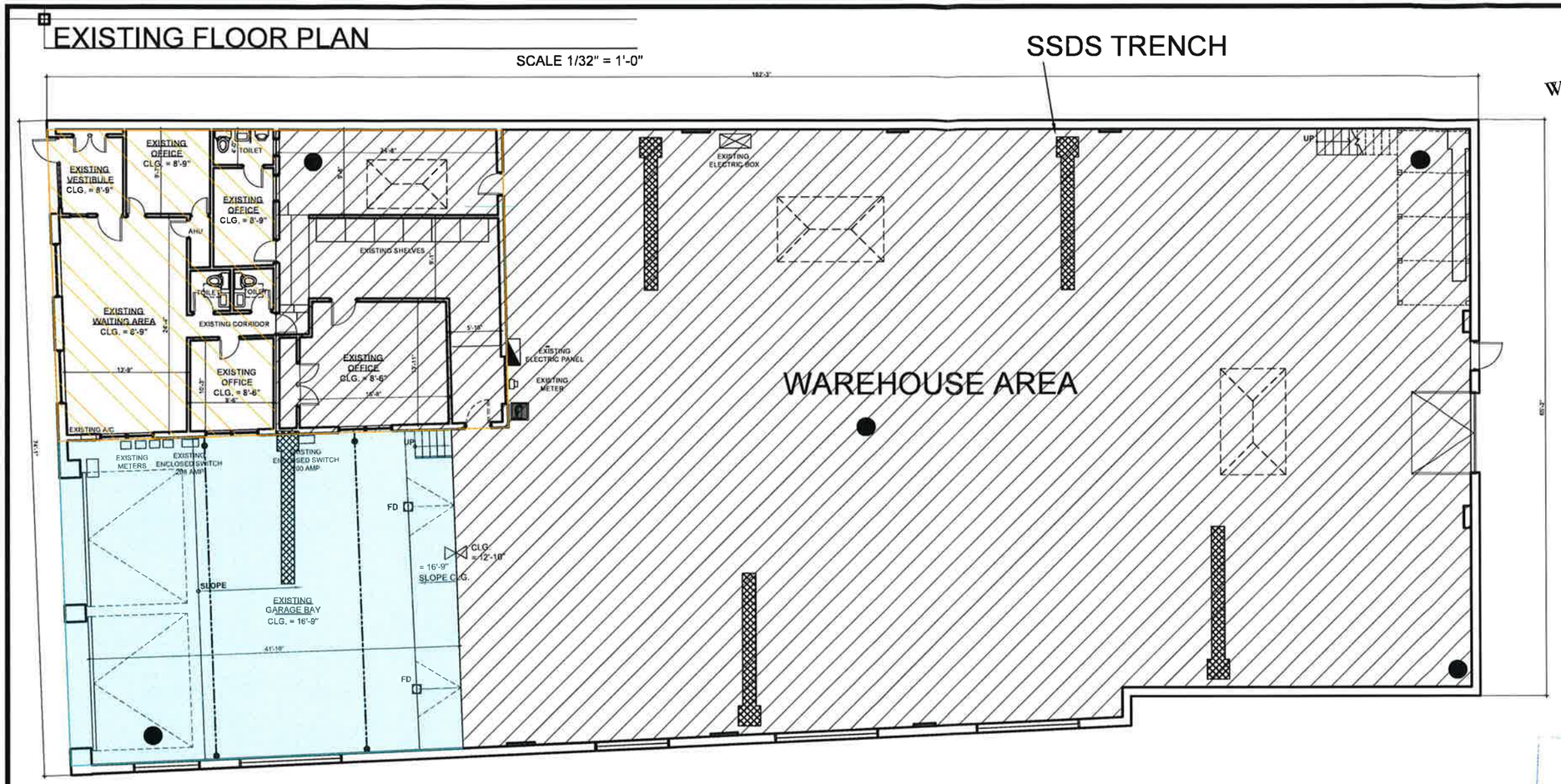
DRAWING NO.: 3

ENGINEER SEAL:

STATE OF NEW YORK
ROBERT L. JACKSON
106372
LICENSED PROFESSIONAL ENGINEER

EXISTING FLOOR PLAN

SCALE 1/32" = 1'-0"



NOTES:

1. 4" SCHEDULE 40 PVC PERFORATED AND SOLID PIPE AND FITTINGS USED FOR THE SUB SLAB PIPE RUNS.
2. EACH OF THE FOUR (4) TRENCHES ARE 2-FEET WIDE BY 12-FEET LONG.
3. PIPING INSTALLED ON A GRADED 4" BED OF ¾" STONE BELOW THE SLAB GRADE.
4. PIPING COUPLED AND GLUED TOGETHER PER MANUFACTURER'S RECOMMENDATION.
5. TRENCH BACKFILLED TO WITHIN 4-INCHES OF FINISH GRADE AND A 20-MIL POLY LINER INSTALLED AND TAPED TO THE EDGES OF THE CONCRETE.
6. PIPING TRANSITIONS ABOVE GROUND TO STEEL PIPING COUPLED TO THE PVC PIPING WITH A "NO HUB" COUPLING.
7. INITIAL 2-FOOT SPOOL OF STEEL PIPE INSTALLED AND SECURED TO THE WALL. CONCRETE REPAIRED WITH A HAND /BAG MIXED 5000 PSI CONCRETE.
8. A FULL PORT THREADED BALL VALVE, A SCH 80 PVC PORT BALL VALVE - $\frac{1}{4}$ INCH MNPT X BARB SAMPLE PORT, AND A MINIHELIC II DIFFERENTIAL PRESSURE GAUGE INSTALLED IN THE PIPING ABOVE GRADE INSIDE THE BUILDING.
9. BOOT INSTALLED ON THE ROOF PENETRATING THE CEILING DIRECTLY ABOVE THE PIPE TO COMPLETE THE VEP INTERIOR INSTALLATION.
10. RN 4EC-4 INLINE RADON FAN SET APPROXIMATELY 2-FEET ABOVE THE ROOF WITH A STACK THAT DOES NOT EXCEED 6-FEET IN OVERALL HEIGHT. A SINGLE POINT OF ANCHORING ON THE ROOF INSTALLED BY RENOVA DIRECTLY TO THE EXISTING PARAPET. SSDS INSTALLED TO MEET NEW YORK STATE DEPARTMENT OF HEALTH, VAPOR INTRUSION GUIDANCE REQUIREMENTS.
11. BUILDING TESTED TO CONFIRM ADEQUATE VACUUM THROUGHOUT THE MONITORED AREA.
12. THE CONTROL FOR THE FIVE EMISSION POINTS INCLUDES INSTALLATION OF THE SENTINEL CLOUD BASED MONITORING SYSTEM. THE SENTINEL IS HOUSED IN A 5.5" X 6.3" X 1.5" ENCLOSURE, WOUNTED ON A WALL INSIDE THE BUILDING.
13. FIVE FLUSH MOUNT MONITORING POINTS/VAPOR PINS CONSISTING OF A STAINLESS STEEL COVER, SAMPLE DEVICE, SIEVE, SLEEVE, AND CAP INSTALLED WITHIN THE BUILDING FLOOR.

LEGEND

- MONITORING POINT / VAPOR PIN
- OFFICE/SHELF AREA
- GARAGE BAY AREA
- 3" TO 5" CONCRETE SLAB
- RETRO-COAT SYSTEM

PREPARED BY:

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NO.	DATE	DESCRIPTION
5	4/25/23	SSDS DETAIL SHEET - 1

PROJECT:

SSDS LAYOUT AS BUILT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

DESIGN BY:	RJ	04/24/2023
DRAWN BY:	JV	10/30/2023
CHECKED BY:	PJ	10/30/2023
FINAL CK BY:	RJ	02/05/2024

PAGE 1 OF 2

PROJECT NO.: 12.0077558.00

DRAWING TITLE: SSDS DETAIL AS BUILT SHEET - 1

DRAWING NO.: FIGURE - 4

ENGINEER SEAL:

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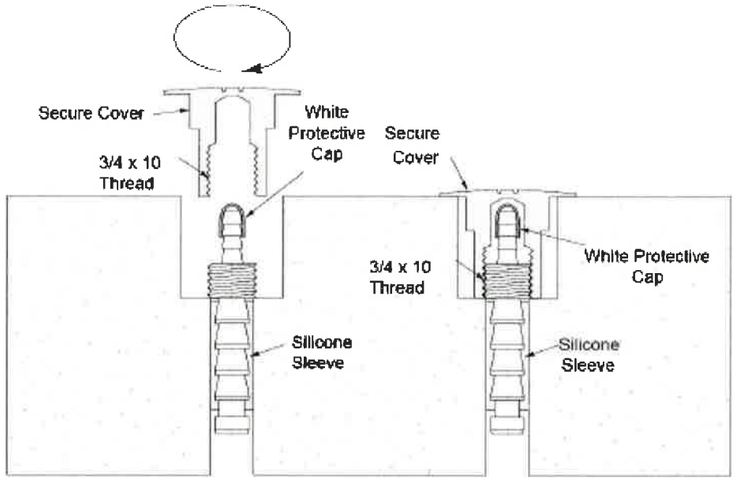
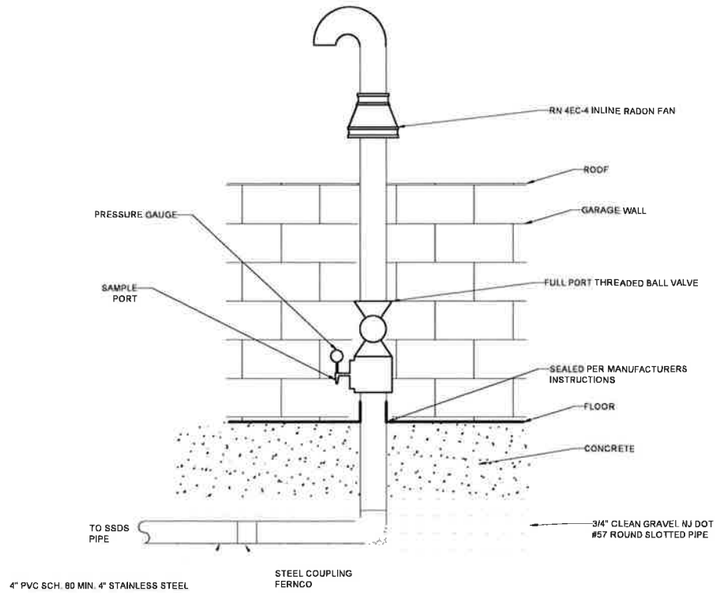
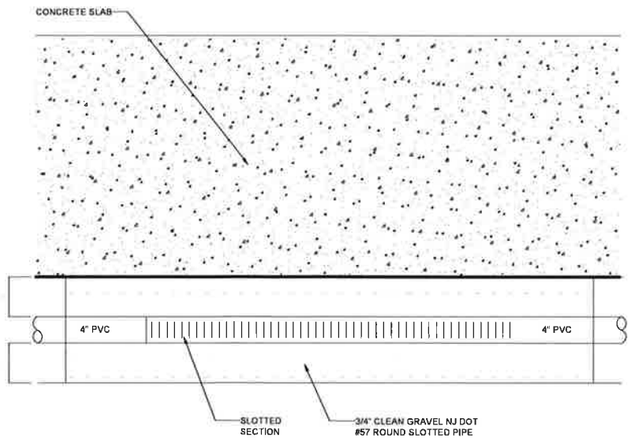
MAY 14 2024



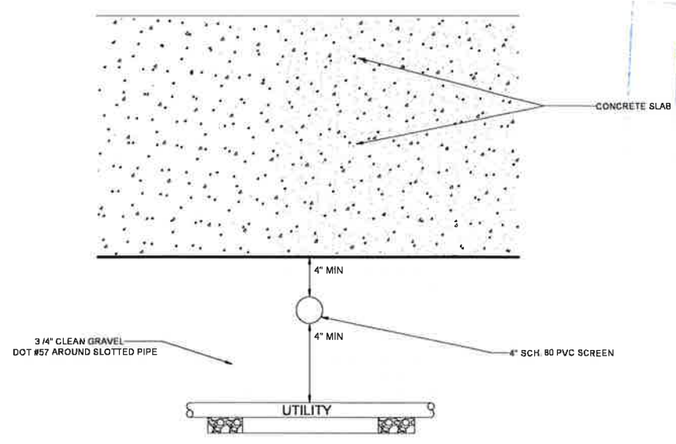
SSDS VAPOR PIN MONITORING POINT DETAIL



SUB SLAB BELOW GRADE/ABOVE GRADE TRANSITION



SSDS INSTALLATION



CONSTRUCTION AND INSTALLATION OF SSDS PIPING

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NO.	DATE	DESCRIPTION
5	10/30/23	SSDS DETAIL SHEET - 2

PROJECT:

SSDS LAYOUT AS BUILT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

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DRAWN BY:	JV	10/30/2023
CHECKED BY:	PJ	10/30/2023
FINAL CK BY:	RJ	02/05/2024
		PAGE 2 OF 2

PROJECT NO.:
12.0077558.00

DRAWING TITLE:
SSDS DETAIL
AS BUILT
SHEET - 2

DRAWING NO.:
FIGURE 4

ENGINEER SEAL:

STATE OF NEW YORK
ROBERT L. JACKSON
106372
LICENSED PROFESSIONAL ENGINEER

ACCEPTED AS COMPLETED
MAY 14 2024

SIDEWALK SURVEY ELEVATION 100'

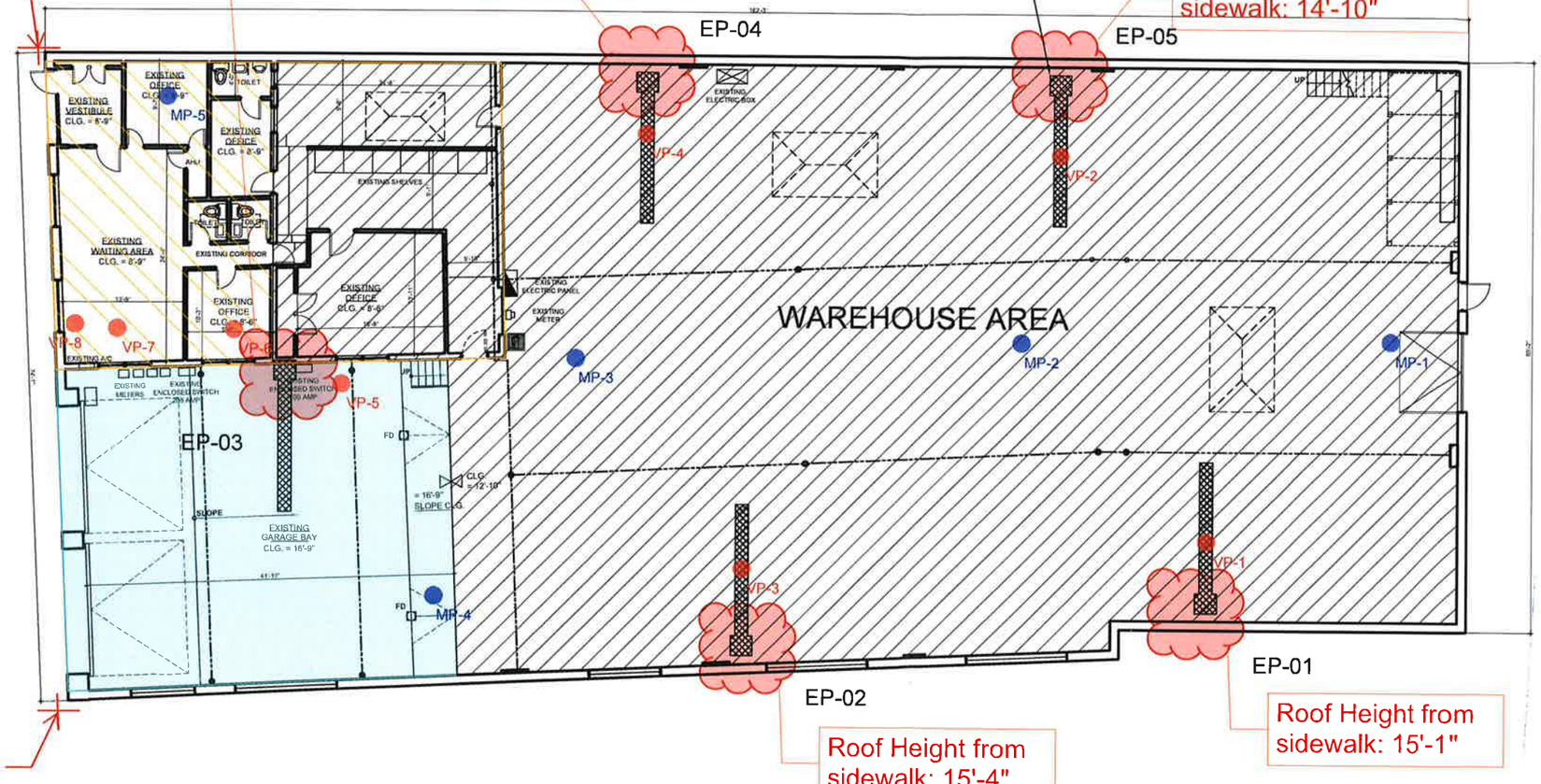
Roof Height from sidewalk: 15'-11"

Roof Height from sidewalk: 15'-2"

NOT DRAWN TO SCALE

SSDS TRENCH (TYP.)

Roof Height from sidewalk: 14'-10"



Roof Height from sidewalk: 15'-4"

Roof Height from sidewalk: 15'-1"

SIDEWALK SURVEY ELEVATION 100'

72 alexander st field dimensions of roof height based on survey.
10/4/23

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LEGEND

- MONITORING POINT
- VAPOR POINT
- OFFICE/SHELF AREA
- GARAGE BAY AREA
- 3" TO 5" CONCRETE SLAB
- RETRO-COAT SYSTEM

PREPARED BY:

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NO.	DATE	DESCRIPTION

PROJECT:
SSDS LAYOUT AS BUILT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

DESIGN BY:	RJ	04/24/2023
DRAWN BY:	JV	04/24/2023
CHECKED BY:	RJ	04/24/2023
FINAL CK BY:	RJ	07/05/2024

PAGE 1 OF 1

PROJECT NO.:
12.0077558.00

DRAWING TITLE:
COMMUNICATION TESTING SAMPLE LOCATION LAYOUT AS BUILT

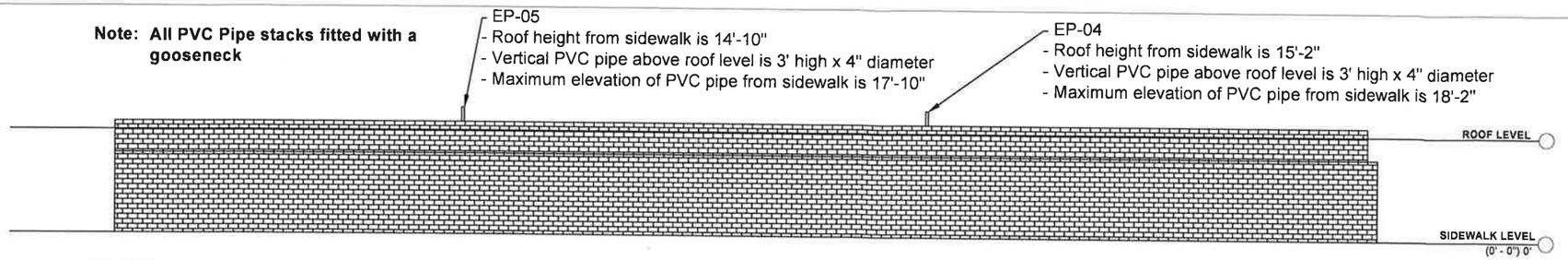
DRAWING NO.:
5

ENGINEER SEAL:

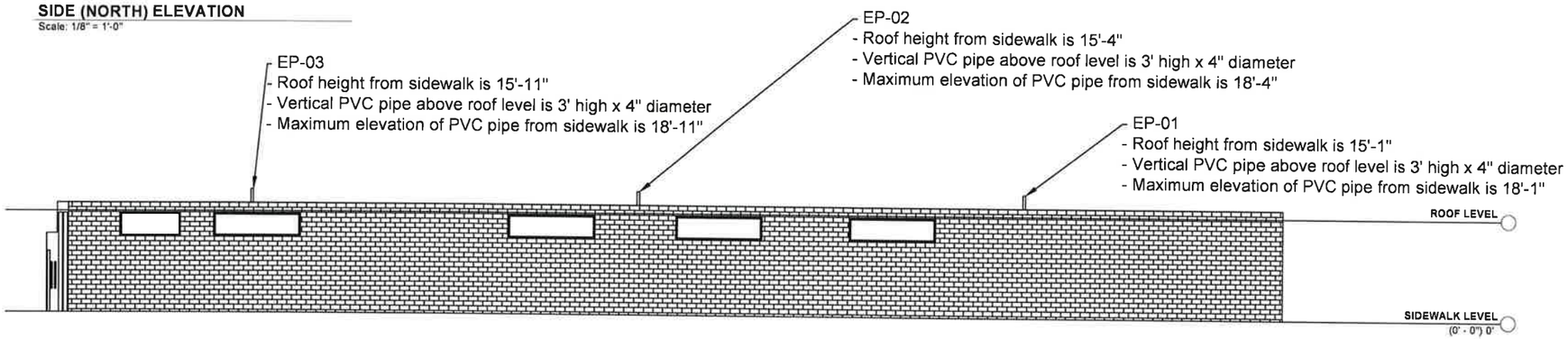
ACCEPTED AS COMPLETED W

MAY 14 2024

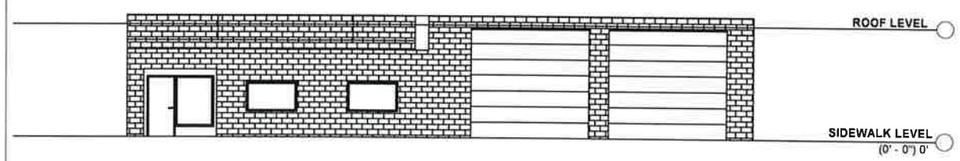
Note: All PVC Pipe stacks fitted with a gooseneck



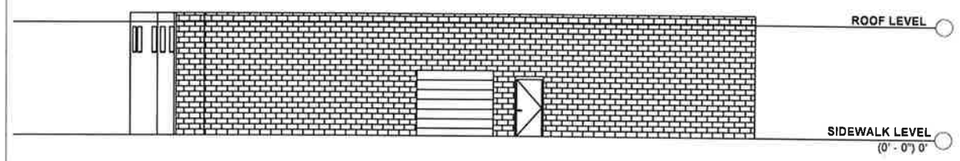
SIDE (NORTH) ELEVATION
Scale: 1/8" = 1'-0"



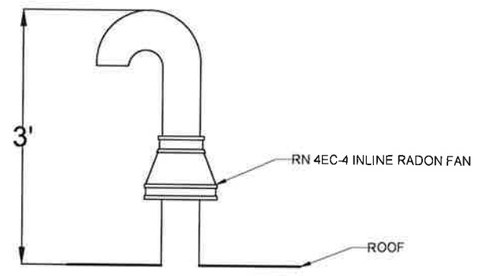
SIDE (SOUTH) ELEVATION
Scale: 1/8" = 1'-0"



ALEXANDER STREET (WEST) ELEVATION
Scale: 1/8" = 1'-0"



REAR (EAST) ELEVATION
Scale: 1/8" = 1'-0"



Detail 1: EQUIPMENT DETAIL

Notes:
1. **Refer to Detail 1 for equipment details.**
2. **Elevations source: Gerald J. Caliendo, R.A., A.I.A. Architect, P.C. - March 7, 2023**

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NO.	DATE	DESCRIPTION
7	12/11/23	ELEVATION VIEW

PROJECT:
SSDS LAYOUT AS BUILT
72 ALEXANDER STREET
YONKERS, NEW YORK 10701

DESIGN BY:	RJ	12/07/2023
DRAWN BY:	JV	12/11/2023
CHECKED BY:	RJ	12/11/2023
FINAL CK BY:	RJ	02/05/2024

PAGE 1 OF 1

PROJECT NO.:
12.0077558.00

DRAWING TITLE:
Engineering Controls
Location Elevation View
As Built

DRAWING NO.: 6

ENGINEER SEAL:

STATE OF NEW YORK
ROBERT J. JACKSON
106372
LICENSED PROFESSIONAL ENGINEER

AS-BUILT
AS COMPLETED WORKS
MAY 14 2024

APPENDIX G – HEALTH AND SAFETY PLAN (HASP)

Known for excellence.
Built on trust.

CONSTRUCTION HEALTH AND SAFETY PLAN

72 Alexander Street,
Block 2608, Lot 25
City of Yonkers, Westchester County, New York
NYSDEC BCP Number: C360154

August 21, 2023
File No. 12.0077593.00

PREPARED FOR:
Fondak Enterprises, LLC
225 Paddock Street
Watertown, New York 13601

GZA GeoEnvironmental of New York
104 West 29th Street, 10th Floor | New York, NY 10001
212-594-8140

31 Offices Nationwide
www.gza.com

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ATTACHMENT D ACCIDENT AND INJURY REPORT

1.0 INTRODUCTION

1.1 OVERVIEW

This project-specific Construction Health and Safety Plan (CHASP) has been developed by GZA GeoEnvironmental of New York (GZA) on behalf of Fondak Enterprises, LLC (Client) to establish the procedures necessary for the protection from potential contaminated materials resulting from the remedial action activities at 72 Alexander Street, City of Yonkers, Westchester County, New York (Site). This CHASP is intended to supplement the Contractor's Safety Program. The procedures in this plan have been developed based on current knowledge regarding the hazards which are known or anticipated for the operations to be conducted at this Site.

1.2 SITE HAZARDS

This CHASP covers only the hazards associated with potential chemical exposures. Physical hazards such as injuries from typical excavation field work activities, including the operation of heavy equipment, noise exposure, heat and cold stress, electrical hazards, fire hazards, excavation hazards and general safety hazards associated with walking on working surfaces (trip and fall) are covered by the Contractor's Safety Program.

The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), Site No. C360154, which is administered by New York State Department of Environmental Conservation (NYSDEC or Department).

The remedial action calls for the handling, transport and disposal of soil, fill, fluids and other materials removed from the property. Site activities may pose chemical exposure hazards through skin contact, ingestion and inhalation from volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals on-Site. The potential adverse health effects form these detected contaminants are diverse. Many of these compounds are known or suspected to result in chronic illness from long-term exposures. However, due to the limited nature of the proposed construction, only acute effects are a potential concern. See **Section 2.0** for detailed chemical hazard information.

1.3 PROJECT TEAM

The organizational structure established for the implementation of construction health and safety requirements established by this CHASP include identifying personnel who have been assigned specific authority to implement and enforce the provisions of this CHASP. Prior to the construction appropriate personnel will be identified in the table below:

Name	**Project Title/Assigned Role**	**Phone Numbers**
TBD	Project Superintendent	Work: TBD Mobile: TBD
TBD	Site Supervisor (Contractor)	Work: TBD Mobile: TBD
TBD	Site Health and Safety Officer (Contractor)	Work: TBD Mobile: TBD

Controlling Site hazards depends upon the degree to which management enforces compliance and employees cooperate with the specified health and safety requirements. Therefore, personnel at all levels of the organization must recognize their individual responsibility to comply. Activities covered by this CHASP must be conducted in

compliance with this CHASP and with applicable federal, state, and local health and safety regulations, including 29 CFR 1910.120. Personnel covered by this CHASP who cannot or will not comply must be excluded from Site activities by the Project Superintendent.

2.0 HAZARD ASSESSMENT

The following hazard assessment applies only to the activities within the specified scope of this CHASP.

2.1 CHEMICAL HAZARDS AND KNOWN/ SUSPECT CHEMICALS OF CONCERN

The chemical hazard information provided below is based on data provided in PS&S September 2017 *Remedial Investigation Report*. During the investigation, Site soils were sampled for VOCs, SVOCs, polychlorinated biphenyls (PCBs), pesticides, and metals. Constituents exceeding the New York State Department of Environmental Conservation (NYSDEC) Part 375: Unrestricted Use Soil Cleanup Objectives (SCOs) and their respective health effects are listed below for reference. Information presented is based upon established Occupational Safety and Health Administration (OSHA) permissible exposure limits (PEL) and the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs) with time-weighted average (TWA). See **Attachment A** for safety data sheets (SDS) related to the compounds listed below. All other analytical parameters were reported within acceptable levels for Site urban residential land use. See **Section 4.2** for a description of the personal protective equipment (PPE) that should be used for this Site.

Chemicals	**REL/PEL/TLV**[1]	**Health Hazards**
Xylene	PEL = 435 mg/m3 TWA REL = 435 mg/m3 TWA	Not classifiable as a human carcinogen.
Benzene	PEL =1 ppm TWA REL = 0.1 ppm TWA	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen
Ethylbenzene	PEL = 435 mg/m3 TWA REL = 435mg/m3 TWA	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma
Benzo(a)anthracene	PEL = 0.2 mg/m3 TWA REL = 0.1 mg/m3 TWA	Irritation to respiratory system, bladder, kidneys, skin; dermatitis, bronchitis, cumulative lung damage; suspect human carcinogen.
Benzo(a)pyrene	PEL = 0.2 mg/m3 TWA REL = 0.1 mg/m3 TWA	Irritation to respiratory system, bladder, kidneys, skin; dermatitis, bronchitis, cumulative lung damage; suspect human carcinogen.
Benzo(b)fluoranthene	PEL = 0.2 mg/m3 TWA REL = 0.1 mg/m3 TWA	No signs or symptoms of acute or chronic exposure have been reported in humans; suspect human carcinogen.
Benzo(k)fluoranthene	not available	not available
Chrysene	PEL = 0.2 mg/m3 TWA REL = 0.1 mg/m3 TWA	Irritation to respiratory system, bladder, kidneys, skin; dermatitis, bronchitis, cumulative lung damage; suspect human carcinogen.
Dibenzo(a,h)anthracene	PEL= Not applicable REL= Not applicable	Probably Carcinogen to Humans- The exposure circumstance entails exposures that are probably carcinogenic to humans.
Indeno(1,2,3-cd)pyrene	not available	not available

[1] The threshold limit value (TLV) of a chemical substance is believed to be a level to which a worker can be exposed day after day for a working lifetime without adverse effects.

Chemicals	REL/PEL/TLV[1]	Health Hazards
Naphthalene	PEL = 50 mg/m3 TWA REL = 50 mg/m3 TWA	Cataracts, jaundice, bloody urine, kidney and liver damage, headache, tiredness, confusion Target organs: Brain, central nervous system, hemolytic anemia, and marked eye and skin irritation
Phenanthrene	PEL = 0.2 mg/m3 TWA REL = 0.1 mg/m3 TWA	Dermatitis, bronchitis, [potential occupational carcinogen]
Pyrene	PEL = 0.2 mg/m3 TWA REL = 0.1 mg/m3 TWA	Inhalation, skin and/or eye contact
Arsenic	PEL = 0.01 mg/m3 TWA REL = 0.002 mg/m3 TWA	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]
Barium	PEL = 0.5 mg/m3 TWA REL = 0.5 mg/m3 TWA	Irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia
Cadmium	PEL = 0.005 mg/m3 TWA	Strong oxidizers; elemental sulfur, selenium & tellurium
Copper	PEL = 0.1 mg/m3 TWA REL = 0.1 mg/m3 TWA	Irritation eyes, upper respiratory system; metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough, lassitude (weakness, exhaustion); metallic or sweet taste; discoloration skin, hair.
Lead	PEL = 0.05 mg/m3 TWA REL = 0.05 mg/m3 TWA	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension.
Mercury	PEL = 0.05 mg/m3 TWA REL = 0.1 mg/m3 TWA	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria.
Copper	PEL = 0.1 mg/m3 REL = 0.1 mg/m3 TLV = 0.2 mg/m3	Irritation eyes, upper respiratory system; metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough, lassitude (weakness, exhaustion); metallic or sweet taste; discoloration skin, hair.

2.2 VOLATILE ORGANIC COMPOUNDS

VOCs including benzene, ethylbenzene, xylene were detected a concentrations exceeding Unrestricted Use SCOs in the soil/fill samples collected during the Remedial Investigation. No other VOCs were detected above the NYSDEC Class GA Ambient Water Quality Standards (AWQS) in groundwater samples. On sites where, high concentrations of these compounds are present, a potential inhalation hazard to the field team during subsurface investigations can result. Community air quality monitoring for VOC concentrations will be implemented throughout the Site during all phases of excavation, and dust management will be in place to ensure minimal exposure to soil VOCs.

2.3 SEMI-VOLATILE ORGANIC COMPOUNDS

SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected at concentrations exceeding their respective Unrestricted Use SCOs. Due to the relatively low vapor pressure of SVOCs, vapor hazards at ambient temperatures are not expected. However, if Site conditions are dry, the generation of contaminated dusts may pose a potential inhalation hazard. Therefore, dust levels should be controlled with wetting if necessary, as described in **Section 3.2**. In addition, repeated contact with certain SVOCs compounds have been associated with the development of skin cancer. Contact of SVOCs with the skin may cause photosensitization of the skin, producing skin burns after subsequent exposure to ultraviolet radiation. Protective measures, such as the wearing of chemically resistant gloves, are appropriate when handling SVOC contaminated materials.

2.4 METALS

Various metals including arsenic, barium, calcium, copper, mercury, and lead were detected in concentrations exceeding UUSCOs in soil samples collected throughout the Site. Overexposure to metal compounds has been associated with a variety of local and systemic health hazards, both acute and chronic in nature, including lung damage, neurological effects, gastrointestinal effects, kidney and liver damage, allergic dermatitis and other skin disorders. Exposure to metals is most commonly through inhalation and ingestion of dust. Metallic mercury is unique among metals, as it releases toxic vapors at normal room temperatures, and can be absorbed through the skin.

To estimate health risk, GZA calculated the airborne mercury exposure through dust. The basis of comparison used was the more conservative nuisance dust standard of the ACGIH Threshold Limit Value, 8-hour time-weighted average of 10 milligram per cubic meter of air (mg/m3). This nuisance dust is a general rule of thumb for the dust allowed before preventive measures, such as soil wetting of exposed soil, are used.

Based on the maximum concentration of mercury detected in soil of 310 mg/kg, the maximum mercury concentration is anticipated to be 0.0031 mg/m3. The OSHA Permissible Exposure Level (PEL) for mercury is a ceiling concentration of 0.1 mg/m3. When compared, the expected mercury in air concentration is a full five orders of magnitude less than the OSHA PEL.

GZA believes that airborne mercury and additional listed metals are not a significant risk to Site workers. GZA understands that mercury is a volatile element. GZA does not anticipate measurable mercury vapor concentrations, given the relatively low soil concentrations.

2.5 PESTICIDES

No pesticides were detected exceeding their Unrestricted Use SCOs at samples collected at the Site.

3.0 AIR MONITORING

Air monitoring falls into two separate categories: direct reading/environmental monitoring, and personal exposure monitoring. The following Sections summarize the types of environmental monitoring as well as the appropriate response actions applicable to the Site.

3.1 ORGANIC VAPOR MONITORING

The potential for volatile vapor hazards has been identified for the Site (see Section 2.2). Therefore, organic vapor monitoring with a photoionization detector (PID) is required during ground intrusive remedial activities on Site.

3.2 AIR MONITORING INSTRUMENTS AND ACTION LEVELS

Photoionization Detector (PID) - Breathing Zone Readings

0 to 10 ppm	Remain in Level D. Use colorimetric tubes or other chemical specific device to verify PID readings do not contain low PEL toxic materials (benzene, vinyl chloride, etc.) where applicable. If benzene is present above 1 ppm withdraw from excavation and proceed to Level C. Low PEL toxic materials are not expected to be present at the Site.
10 to 25 ppm	Withdraw from work area and contact Project Manager. Proceed to Level C protection for re-entry, or discontinue operation
> 25 ppm	Secure operations, withdraw from work area, and discontinue work at that location until contaminants can be evaluated, and detailed plan implemented.

3.3 TOTAL PARTICULATES

Due to the presence of SVOCs, pesticides and metals in soils on-Site, total respirable particulates may be a concern. Dust levels should be visually monitored and if levels become noticeable, such as visible dust present within the breathing zone, then soils should be wetted down to control dusty conditions. Wetting may be accomplished using various methods, including a hose connected to a fire hydrant or other on-Site source of water. The Client's Project Superintendent shall be responsible for determining when the wetting of soils is needed and the most appropriate method to use. In addition, recommended measurements for particulate monitoring are detailed below.

Upwind concentrations should be measured at the start of each workday during active handling of excavated materials (including stockpiling and truck loading) and periodically thereafter to establish background conditions. The particulate air monitoring work will be conducted using a pDR-1200 personal airborne particulate monitor (or approved equivalent) calibrated daily.

The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers (um) in size (PM-10) and capable of integrating over a period of five minutes or less for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate excess of the action level.

Dust migration will be visually assessed during all work activities, and at no time will the downwind perimeter particulate levels be allowed to exceed a total standard of 10 mg/m^3 (or "nuisance" dust levels).

If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) for a five-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques (e.g., soil wetting) provided the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and no visible dust is migrating from the work area.

If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ug/m^3 above the upwind level, work must be stopped, and a re-evaluation of activities initiated. Work can resume if dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentrations to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

3.4 PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Parameter	Monitoring Instrument	Response Levels(above background levels)	Action	Conditions for Continuing Work Activities
Particulates < 10 um (PM-10)	Dust Meter	Fugitive dust migration	1. Implement dust suppression techniques	Dust suppression techniques are in place
		> 100 ug/m^3 but < 150 ug/m^3	1.Implement dust suppression techniques	Levels must not exceed 150 ug/m^3 with dust suppression techniques in
		> 150 ug/m^3	1. Halt activity 2. Re-evaluate activities	Levels decrease below 150 ug/m^3 and fugitive dust migration is

3.5 PERSONAL EXPOSURE MONITORING

No asbestos, no lead-based paint, and no radiological hazards have been identified within the vicinity of the proposed excavation area at the Site as the Site is currently undeveloped. Therefore, personal exposure monitoring is not required during soil excavations.

4.0 PERSONAL PROTECTIVE EQUIPMENT

PPE will be donned as described below for the activities covered by this CHASP. Based on available analytical data and the proposed intrusive activities, the Contractor, anticipates that all activities will require Level D or Modified Level D PPE. Level C PPE and Level B are not expected to be required.

4.1 GENERAL SITE WORK

General Site work conducted outside the excavation areas, operators of heavy equipment, and non-intrusive activities which do not generate dust will require Level D protective equipment. Level D is defined as:

- Hardhat;
- Eye protection;
- Hearing protection (with Site workers at all times and donned when appropriate);
- Steel-toed work boots; and
- Work clothes.

Workers shall wear appropriate hearing protection during designated hearing protection-required tasks (such as jack hammering, pile driving etc.). To reduce the exposure to noise, personnel working in areas of excessive noise must use hearing protectors (earplugs or earmuffs).

Rule-of-Thumb: Wherever actual data from sound level meters or noise dosimeters is unavailable, if it is necessary to raise one's voice above a normal conversational level to communicate with others within three to five feet away, hearing protection should be worn.

4.2 EXCAVATION AREAS AND OTHER SOIL HANDLING

Personnel working in the areas of active excavation, but not operating heavy equipment, and any other personnel potentially contacting contaminated materials will be required to wear Modified Level D PPE. Modified Level D is defined as:

- Hardhat;
- Eye protection;
- Hearing protection (as warranted see above);
- Steel-toed work boots;
- Tyvek Coveralls; and
- Disposable nitrile chemically resistant gloves.

5.0 SITE CONTROL

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas along with personal protective equipment requirements will be clearly identified with signage. Pedestrian traffic will be managed to the extent possible by the Contractor's Traffic and Pedestrian Control Plan.

The Contractor will designate a work zone and support zone as defined below.

5.1 WORK ZONE

Work zones on Site will be temporary or dynamic, encompassing the work area(s) actively being worked on that particular day. Site personnel will be advised of the current work area(s) as part of daily site safety meetings. The Contractor will have a hydrant permit or other water source available to wet down exposed soils to control dust.

5.2 SUPPORT ZONE

The support zone will consist of an area outside the areas of active excavation and soil handling, where equipment and support vehicles will be located. Eating, drinking and smoking will be permitted only in this area. Sanitary facilities will be located on Site. In addition, potable water and water and soap for hand washing will be available at the Site.

5.3 OTHER SITE CONTROL AND SAFETY MEASURES

The following measures are designed to augment the specific health and safety guidelines provided in this plan. These issues will form the basis of the daily safety meetings discussed in **Section 7.4**, below.

- The Site hazards will be evaluated by the Client's Project Superintendent using the Site Safety Checklist.
- No one is to perform field work alone. Team members must be intimately familiar with the procedures for initiating an emergency response.
- Avoidance of contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk around (not through) puddles and discolored surfaces. Do not kneel on the ground or set equipment on the ground.
- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited except in the support zone after proper decontamination as defined in **Section 6.0**.
- The use of alcohol or drugs is prohibited on-Site and during the conduct of field operations.
- Safety equipment (PPE) will be required for all field personnel unless otherwise approved by the subcontractor's health and safety representatives and/or the Project Superintendent.

5.4 SITE SECURITY

The Site shall be unoccupied during Site work EXCEPT for Contractor personnel and subcontractors. If possible, access to the work areas during field work will be limited by closing site gates to reduce unauthorized pedestrian traffic. The Client's Project Superintendent is responsible for identifying the presence of all employees on Site.

Equipment left on Site during off hours must be locked, immobilized and/or otherwise secured to prevent theft or unauthorized use or access. The Contractor and subcontractors' employees will not be permitted on Site during off-hours without specific client approval.

6.0 DECONTAMINATION

Proper decontamination will be performed for personnel and equipment before leaving the Site. All solid waste generated during decontamination will be bagged by the Contractor personnel and stored on Site for disposal. Water will be disposed of by on-Site infiltration into soil within an exclusion zone.

6.1 PERSONAL DECONTAMINATION

Personal decontamination will be accomplished by following a systematic procedure of cleaning and removal of personal protective equipment (PPE). The Contractor will supply decontamination equipment to allow PPE to be brushed to remove gross contamination and then scrubbed clean in a detergent solution and then rinsed clean. To facilitate this, a three-basin wash system will be set up on site by the Contractor.

Disposable PPE, such as Tyvek coveralls, gloves, and hearing protection, etc. will be placed in trash bags in an on-Site container pending its disposal. Alternative chemical decontamination procedures, such as steam-cleaning reusable rubber outer boots, may be used if necessary.

Steps required in a decontamination sequence will depend on the level of protection worn in accordance with **Section 4.0**:

1. Remove and wipe clean hard hat.
2. Brush boots and gloves of gross contamination.
3. Scrub boots and gloves clean.
4. Remove boot covers (if in use).
5. Rinse boots and gloves.
6. Dry non-disposable equipment with paper towels
7. Remove Tyvek coveralls.
8. Remove eye protection.
9. Remove chemically resistant gloves.

6.2 EQUIPMENT DECONTAMINATION

Hand tools and portable equipment will be decontaminated upon leaving the active excavation areas using the same procedures for personal decontamination. Wooden tools are difficult to decontaminate because they absorb chemicals. Wooden hand tools will be kept on Site for the project duration and handled only by protected workers. At the end of the Site activities, wooden tools will be discarded if they cannot be decontaminated properly.

Large equipment will be decontaminated in an area near the entrance to the Site. Decontamination of large equipment will mitigate the risk of spreading potentially contaminated soil off-Site. The Contractor will use a combination of long-handled brushed, rods and shovels for general exterior cleaning and dislodging contaminated soil caught in tires and the undersides of vehicles and equipment.

Prior to leaving the Site, large equipment will be inspected to assure that excess material has not adhered to the equipment. If needed, the Contractor will clean the large equipment, including washing tires and undercarriages with a hose to remove excess adhered soil prior to leaving the Site.

Exposed excavated material will be covered on each truck after loading. The cover will be secured and remain in place until the container has reached the disposal facility.

7.0 MEDICAL MONITORING AND TRAINING REQUIREMENTS

Training records for Site personnel and subcontractors shall be provided by the Contractor prior to on-Site work and will be maintained on Site.

7.1 MEDICAL MONITORING

It is not anticipated that respiratory protection will be required.

7.2 TRAINING

All personnel covered by this CHASP must have completed the appropriate training requirements specified in 29 CFR 1910.1200 Hazard Communication and 29 CFR 1910.120(e).

Workers requiring access to the excavation (laborers and operators) prior to completion of soil remedial activities associated with petroleum-contaminated soils will require 40-hour HAZWOPER training. Workers at the site that may come into contact with other contaminated soils will require 30-hour HAZWOPER training.

Also, at least one Contractor employee must be on Site during all activities to act as the Site Foreman and will be responsible for identifying existing and predictable hazards in surroundings or working conditions that are unsanitary, hazardous, or dangerous

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." The Contractor personnel covered by this CHASP may not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). The Contractor response actions will be limited to evacuation and medical/first aid as described within this Section, below.

The basic elements of an emergency evacuation plan include employee training, alarm systems, escape routes, escape procedures, critical operations or equipment, rescue and medical duty assignments to Site workers and or the community, and will have the authorization to take prompt corrective measures to eliminate them. This individual must have documentation of at least three days of supervised field experience as well as completion of the specified 8-hour training course for managers and supervisors. Records of certifications and training should be kept by the Contractor.

7.3 SUBCONTRACTORS

Subcontractors will be required to provide to the Contractor Project (Site) Manager specific written documentation that each individual assigned to this project has completed the medical monitoring and training requirements specified above. This information must be provided prior to their performing any work on site.

7.4 SITE SAFETY MEETINGS

Prior to the commencement of on-Site investigative activities, a Site safety meeting will be held to review the specific requirements of this CHASP. Sign-off sheets will be collected at this meeting (see **Attachment B**). Short safety refresher meetings will be conducted daily or, if more frequent, as conditions or work activates change. In addition, the Project Superintendent will document that Site visitors have had the required training in accordance with 29 CFR 1910.120 and will provide documented pre-entry safety briefings.

8.0 EMERGENCY ACTION PLAN

, designation of responsible parties, emergency reporting procedures, and methods to account for all employees after evacuation.

8.1 EMPLOYEE INFORMATION

General training regarding emergency evacuation procedures are included in the Contractor initial and refresher training courses. Also, as described, employees must be instructed in the specific aspects of emergency evacuation applicable to the Site as part of the site safety meeting prior to the commencement of all on-site activities. On-Site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed. This information will be provided during the Site safety meetings (see **Section 7.4**) and will be documented by the Contractor.

8.2 EMERGENCY SIGNAL AND ALARM SYSTEMS

An emergency communication system must be in effect at all sites. The most simple and effective emergency communication system in many situations will be direct verbal communications. Each site must be assessed at the time of initial Site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices cannot be clearly perceived above ambient noise levels (i.e., noise from heavy equipment, trucks, etc.) and anytime a clear line-of-sight cannot be easily maintained amongst all personnel because of distance, terrain or other obstructions. The Contractor will maintain an air horn (or whistle) on-Site that will be used to signal an emergency so that it can be heard over other construction noises on-Site.

8.3 EMERGENCY CONTACTS

Police:	911
Fire:	911
Ambulance:	911
Hospital:	(718) 250-8000 (The Brooklyn Hospital Center)

8.4 HOSPITAL LOCATION

The Brooklyn Hospital Center is located at 121 Dekalb Avenue, Brooklyn, NY 11201. **Attachment C** presents a hospital route map.

8.5 INCIDENT REPORTING PROCEDURES

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation should be initiated as soon as emergency conditions are under control. The purpose of this investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided.

The investigation should begin while details are still fresh in the mind of anyone involved. The person administering first aid may be able to start the fact gathering process if the injured can speak. Pertinent facts must be determined. Questions beginning with who, what, when, where, and how are usually most effective to discover ways to improve job performance in terms of efficiency and quality of work, as well as safety and health concerns. An Accident and Injury Report Form is included as **Attachment D**.

ATTACHMENT A — SAFETY DATA SHEETS

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.0 Revision Date 29.10.2012
Print Date 19.04.2017
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : Arsenic

Product Number : 267961
Brand : Aldrich
Index-No. : 033-001-00-X
CAS-No. : 7440-38-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Israel Ltd.
3 PARK RABIN, PLAUT
7670603 REHOVOT
ISRAEL

Telephone : +972 8948-4222
Fax : +972 8948-4200

1.4 Emergency telephone number

Emergency Phone # : +972 (8) 948-4222

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Oral (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Pictogram

Signal word Danger

Hazard statement(s)
H301 Toxic if swallowed.
H331 Toxic if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/

physician.

P311	Call a POISON CENTER or doctor/ physician.
P501	Dispose of contents/ container to an approved waste disposal plant.

Supplemental Hazard Statements: none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)

R-phrase(s)

R23/25	Toxic by inhalation and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S20/21	When using do not eat, drink or smoke.
S28	After contact with skin, wash immediately with plenty of soap and water.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/ Safety data sheets.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : As
Molecular Weight : 74,92 g/mol

Component		Concentration
Arsenic		
CAS-No.	7440-38-2	-
EC-No.	231-148-6	
Index-No.	033-001-00-X	

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

4.3 Indication of any immediate medical attention and special treatment needed

no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Arsenic oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 480 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 30 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Colour: grey
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: 817 °C - lit.
f)	Initial boiling point and boiling range	613 °C - lit.
g)	Flash point	not applicable
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	5,727 g/mL at 25 °C
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available

p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat. Exposure to air may affect product quality.

10.5 Incompatible materials
Oxidizing agents, Halogens, Palladium undergoes a violent reaction with arsenic, Zinc, Platinum oxide, Nitrogen trichloride, Bromine azide

10.6 Hazardous decomposition products
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - 763 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

LD50 Oral - mouse - 145 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

Inhalation: no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

IARC: 1 - Group 1: Carcinogenic to humans (Arsenic)

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. May cause respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Additional Information
RTECS: CG0525000

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 9,9 mg/l - 96,0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 3,8 mg/l - 48 h

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1558 IMDG: 1558 IATA: 1558

14.2 UN proper shipping name
ADR/RID: ARSENIC
IMDG: ARSENIC
IATA: Arsenic

14.3 Transport hazard class(es)

ADR/RID: 6.1	IMDG: 6.1	IATA: 6.1

14.4 Packaging group

ADR/RID: II	IMDG: II	IATA: II

14.5 Environmental hazards

ADR/RID: yes	IMDG Marine pollutant: yes	IATA: no

14.6 Special precautions for user

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

Version 6.8
Revision Date 10/19/2022
Print Date 08/12/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Barium chloride

Product Number : 202738
Brand : Aldrich
Index-No. : 056-004-00-8
CAS-No. : 10361-37-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 4), H332
Eye irritation (Category 2A), H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word Danger

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Hazard statement(s)

H301	Toxic if swallowed.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.

Precautionary statement(s)

P261	Avoid breathing dust.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	BaCl2
Molecular weight	:	208.23 g/mol
CAS-No.	:	10361-37-2
EC-No.	:	233-788-1
Index-No.	:	056-004-00-8

Component	Classification	Concentration
barium chloride		
	Acute Tox. 3; Acute Tox. 4; Eye Irrit. 2A; H301, H332, H319	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration. Oxygen if necessary. Immediately call in physician.

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In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Hydrogen chloride gas
Barium oxide
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

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6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture.

Hygiene measures

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Hygroscopic.

Storage class

Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
barium chloride	10361-37-2	TWA	0.5 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	0.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	0.5 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Not classifiable as a human carcinogen		

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		PEL	0.5 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

8.2 Exposure controls

Appropriate engineering controls
Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance Form: powder

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		Color: white
b)	Odor	odorless
c)	Odor Threshold	Not applicable
d)	pH	0.8 at 510.4 g/l at 37 °C (99 °F)
e)	Melting point/freezing point	Melting point/range: 963 °C (1765 °F) - lit.
f)	Initial boiling point and boiling range	1,560 °C 2,840 °F at 1,013 hPa
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	The product is not flammable.
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	3.856 g/mL at 25 °C (77 °F) - lit.
	Relative density	No data available
n)	Water solubility	375 g/l at 20 °C (68 °F)
o)	Partition coefficient: n-octanol/water	Not applicable for inorganic substances
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Risk of explosion with:
furan-2-percarbonic acid

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Violent reactions possible with:
halogen-halogen compounds
Strong oxidizing agents
strong reducing agents
acids

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 118 mg/kg
Remarks: (RTECS)
Inhalation: No data available
Dermal: No data available
No data available

Skin corrosion/irritation
Skin - reconstructed human epidermis (RhE)
Result: No skin irritation - 15 min
Remarks: (ECHA)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: irritating
(OECD Test Guideline 405)

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: negative
(OECD Test Guideline 429)

Germ cell mutagenicity
Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: Mouse lymphoma test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476

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Result: negative

Carcinogenicity
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: CQ8750000
Vomiting, Diarrhea
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

The following applies to soluble barium compounds in general: after swallowing: mucosal irritation, nausea, salivation, vomiting, dizziness, pain, colics, and diarrhoea. Systemic effects include: cardiac dysrhythmias, bradycardia (subdued cardiac activity), rise in blood pressure, shock and circulatory collapse as well as muscular rigidity.

Chronic intoxication:

damage of respiratory tract
conjunctivitis
Dermatitis
cardiovascular disorders

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

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Toxicity to fish	static test LC50 - Danio rerio (zebra fish) - > 174 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test LC50 - Daphnia magna (Water flea) - 14.5 mg/l - 48 h Remarks: (ECHA) (referred to the cation)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata (algae) - > 100 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test EC50 - activated sludge - > 943.1 mg/l - 3 h (OECD Test Guideline 209)
Toxicity to fish(Chronic toxicity)	semi-static test NOEC - Danio rerio (zebra fish) - >= 1.26 mg/l - 33 d (OECD Test Guideline 210)

12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Bioaccumulation	Lepomis macrochirus - 0.065 mg/l(barium chloride) Bioconcentration factor (BCF): 22.8

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)

UN number: 1564 Class: 6.1 Packing group: III
Proper shipping name: Barium compounds, n.o.s. (barium chloride)
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

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IMDG
UN number: 1564 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: BARIUM COMPOUND, N.O.S. (barium chloride)

IATA
UN number: 1564 Class: 6.1 Packing group: III
Proper shipping name: Barium compound, n.o.s. (barium chloride)

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
barium chloride	10361-37-2	2015-07-08

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.8 Revision Date: 10/19/2022 Print Date: 08/12/2023

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SAFETY DATA SHEET

Benzene

Section 1. Identification

GHS product identifier : Benzene

Chemical name : benzene

Other means of identification : benzene, purebenzol; cyclohexatriene; phenyl hydride; phene; coal naphtha; pyrobenzol

Product type : Liquid.

Product use : Synthetic/Analytical chemistry.

Synonym : benzene, purebenzol; cyclohexatriene; phenyl hydride; phene; coal naphtha; pyrobenzol

SDS # : 001062

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
GERM CELL MUTAGENICITY - Category 1
CARCINOGENICITY - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
Causes skin irritation.
Causes serious eye irritation.
May cause genetic defects.
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.
May form explosive mixtures with air.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Obtain special instructions before use. Wear protective gloves. Wear protective clothing. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Keep container tightly closed. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

Section 2. Hazards identification

Response : IF exposed or concerned: Get medical advice or attention. Take off contaminated clothing and wash it before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : benzene

Other means of identification : benzene, purebenzol; cyclohexatriene; phenyl hydride; phene; coal naphtha; pyrobenzol

Product code : 001062

CAS number/other identifiers

CAS number : 71-43-2

Ingredient name	%	CAS number
benzene	100	71-43-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Section 4. First aid measures

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, irritation, redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Do not ingest. Empty containers retain product residue and can be hazardous. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not breathe vapor or mist. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Store locked up. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
benzene	**ACGIH TLV (United States, 3/2019).** **Absorbed through skin.** STEL: 8 mg/m³ 15 minutes. STEL: 2.5 ppm 15 minutes. TWA: 1.6 mg/m³ 8 hours. TWA: 0.5 ppm 8 hours. **NIOSH REL (United States, 10/2016).** STEL: 1 ppm 15 minutes. TWA: 0.1 ppm 10 hours. **OSHA PEL (United States, 5/2018).** STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. **OSHA PEL Z2 (United States, 2/2013).** AMP: 50 ppm 10 minutes. CEIL: 25 ppm TWA: 10 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Watery liquid.]

Color : Colorless. Yellowish.

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Melting point : 5.49°C (41.9°F)

Boiling point : 80.09°C (176.2°F)

Critical temperature : 288.95°C (552.1°F)

Flash point : Closed cup: -11°C (12.2°F)

Evaporation rate : 3.5 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 1.2%
Upper: 7.8%

Vapor pressure : 10 kPa (75.01 mm Hg) [room temperature]

Vapor density : 2.7 (Air = 1)

Specific Volume (ft ^{3}/lb) : 1.1403

Gas Density (lb/ft ^{3}) : 0.877 (20°C / 68 to °F)

Relative density : 0.88

Solubility : Not available.

Solubility in water : 1.88 g/l

Partition coefficient: n-octanol/water : 2.13

Auto-ignition temperature : 498°C (928.4°F)

Decomposition temperature : Not available.

Viscosity : Dynamic (room temperature): 0.6 mPa·s (0.6 cP)

Flow time (ISO 2431) : Not available.

Molecular weight : 78.12 g/mole

Aerosol product

Heat of combustion : -40611960 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Section 10. Stability and reactivity

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
benzene	LC50 Inhalation Gas. LD50 Oral	Rat Rat	10000 ppm 930 mg/kg	7 hours -

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
benzene	Eyes - Moderate irritant Eyes - Severe irritant Skin - Mild irritant Skin - Mild irritant Skin - Moderate irritant	Rabbit Rabbit Rat Rabbit Rabbit	- - - - -	88 mg 24 hours 2 mg 8 hours 60 Ul 24 hours 15 mg 24 hours 20 mg	- - - - -

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
benzene	+	1	Known to be a human carcinogen.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
benzene	Category 1	-	-

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Section 11. Toxicological information

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, irritation, redness

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Causes damage to organs through prolonged or repeated exposure.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : May cause genetic defects.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1600000 µg/l Fresh water	Algae - Selenastrum sp.	96 hours
	Acute EC50 9.23 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21 mg/l Marine water	Crustaceans - Artemia salina	48 hours
	Acute LC50 5.28 ul/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic EC10 >1360 mg/l Fresh water	Algae - Scenedesmus subspicatus	96 hours
	Chronic NOEC 98 mg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks

Section 12. Ecological information

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
benzene	2.13	11	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Benzene (I,T)	71-43-2	Listed	U019

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1114	UN1114	UN1114	UN1114	UN1114
UN proper shipping name	BENZENE	BENZENE	BENZENE	BENZENE	BENZENE
Transport hazard class(es)	3	3	3	3	3
Packing group	II	II	II	II	II
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 14. Transport information

Additional information

DOT Classification : **Reportable quantity** 10 lbs / 4.54 kg [1.3675 gal / 5.1767 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
Limited quantity Yes.
Quantity limitation Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).
Explosive Limit and Limited Quantity Index 1
Passenger Carrying Road or Rail Index 5

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 5 L. Cargo Aircraft Only: 60 L. Limited Quantities - Passenger Aircraft: 1 L.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
Clean Water Act (CWA) 307: benzene
Clean Water Act (CWA) 311: benzene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	benzene	71-43-2	100
Supplier notification	benzene	71-43-2	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

Section 15. Regulatory information

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

⚠ **WARNING**: This product can expose you to Benzene, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Benzene	Yes.	Yes.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : **Japan inventory (ENCS)**: This material is listed or exempted.
Japan inventory (ISHL): This material is listed or exempted.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Thailand : Not determined.

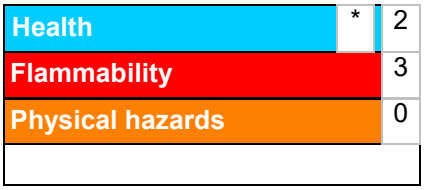
Turkey : This material is listed or exempted.

United States : This material is active or exempted.

Viet Nam : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Section 16. Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	Expert judgment
SKIN IRRITATION - Category 2	Expert judgment
EYE IRRITATION - Category 2A	Expert judgment
GERM CELL MUTAGENICITY - Category 1	Expert judgment
CARCINOGENICITY - Category 1	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Expert judgment

History

Date of printing : 6/1/2020

Date of issue/Date of revision : 6/1/2020

Date of previous issue : No previous validation

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet

Prepared in accordance with Commission Regulation (EU) 2015/830

Stock Number: 31270
Revision Date: 01-08-2019
This document replaces SDS dated: 13-08-2018
2 Letter ISO country code/language code: UK/EN

Benzo(a)anthracene Standard

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier: **Benzo(a)anthracene Standard**
Stock Number: 31270

Other means of identification:
Synonyms: None Known
REACH Registration No.: None Known
Molecular formula: CH3OH

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Relevant identified uses: For Laboratory use only
Uses advised against: Uses other than recommended use.

1.3 Details of the Supplier of the Safety Data Sheet:	**Manufacturer**	**Supplier**
	Restek Corporation 110 Benner Circle Bellefonte, Pa. 16823 USA 00 1 814-353-1300 00 1 814-353-1309 sds@restek.com	Thames Restek UK LTD Units 8-16, Ministry Wharf Wycombe Road, Saunderton Buckinghamshire United Kingdom HP14 4HW 01494 563377 sales@thamesrestek.co.uk
1.4 Emergency telephone number:	00 1 800-424-9300 (CHEMTREC within the US) 00 1 703-741-5970 (Outside USA)	0870-8200418 (CHEMTREC within the UK) +1 703-741-5970 (CHEMTREC International)

Poison Centre contact information: National Poisons Information Service (NPIS)
Email: director.birmingham.unit@npis.org
Website: http://www.npis.org/

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

Classification according to Regulation (EC) No 1272/2008 [CLP]: Carcinogenicity Category 1B
Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1

Flammable Liquid Category 2
Hazardous to the aquatic environment - Chronic Category 2
Acute Toxicity - Dermal Category 3
Acute Toxicity - Oral Category 3

2.2 Label elements:

Labelling according to Regulation (EC) No 1272/2008 [CLP]:

Hazard pictograms:

Signal Word: Danger

Hazard Statements:
H225 - Highly flammable liquid and vapour
H301+H311 - Toxic if swallowed or in contact with skin
H350 - May cause cancer.
H370 - Causes damage to organs
H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements:
P201 - Obtain special instructions before use.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 - Keep container tightly closed.
P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.

Supplemental Hazard information (EU): None Known

2.3 Other hazards: This substance does not meet the PBT or vPvB criteria of REACH, Annex XIII

SECTION 3: Composition/information on ingredients

3.1 Substances:
Not applicable

3.2 Mixtures:

Chemical Name	%	CAS #	EC No. REACH Registration No.	Classification (EC) No 1272/2008	M Factor	SCL	Acute Toxicity Estimates
benz (a) anthracene	0.1	56-55-3	200-280-6 None Known	Aquatic Acute 1; H400 Aquatic Chronic 1; H410 Carc. 1B; H350	AQUATIC CHRONIC 1: M = 100 AQUATIC ACUTE 1: M = 100	No data available	Not determined
methanol	99.9	67-56-1	200-659-6 None Known	Acute Tox. 3 (Dermal); H311 Acute Tox. 3 (Inh Dust/Mist); H331 Acute Tox. 3 (Oral); H301 Flam. Liq. 2; H225 STOT SE 1; H370	No data available	STOT SE 2: 3%<10% STOT SE 1: 10%	Not determined

For full text of H-statements see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures:

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eye contact: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

Self protection of the first aider: No data available

4.2 Most important symptoms and Coma and death

effects, both acute and delayed:

4.3 Indication of any immediate medical attention and special treatment needed: IF exposed or concerned: Get medical advice/ attention. IF exposed or concerned: Call a POISON CENTER/doctor. Call a POISON CENTER/doctor if you feel unwell.

SECTION 5: Firefighting measures

5.1 Extinguishing media:

Suitable extinguishing media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire.

Unsuitable extinguishing media: None Known

5.2 Special hazards arising from the substance or mixture: Vapors may be ignited by sparks, flames or other sources of ignition if material is above the flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

5.3 Advice for firefighters: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Non-emergency personnel: Non-emergency personnel should be kept clear of the area

Emergency responders: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

6.2 Environmental precautions: No data available

6.3 Methods and material for containment and cleaning up:

Small spills: Refer to information provided for large spills

Large spills: Prevent the spread of any spill to minimize harm to human health and the

environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

6.4 Reference to other sections: Refer to section 13 for disposal information

SECTION 7: Handling and storage

7.1 Precautions for safe handling: Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment

7.2 Conditions for safe storage, including any incompatibilities:

Conditions for safe storage: Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

Materials to Avoid/Chemical Incompatibility: Strong oxidizing agents

7.3 Specific end use(s): For Laboratory use only

SECTION 8: Exposure controls/personal protection

8.1 Control parameters:

Occupational Exposure limit values:

Chemical Name	United Kingdom - Workplace Exposure Limits (WELs) - TWAs	United Kingdom - Workplace Exposure Limits (WELs) - STELs	United Kingdom - Biological Monitoring Guidance Values
methanol	200 ppm TWA; 266 mg/m3 TWA	250 ppm STEL; 333 mg/m3 STEL	No data available

DNEL: None Known

PNEC: None Known

8.2 Exposure controls:

Appropriate engineering controls: Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.

Individual protection measures, such as personal protective equipment:

Eye and face protection: Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.

Skin Protection:

Hand protection: No information available

Other skin protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work
Respiratory Protection:	If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection. Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms.
Respirator Type(s):	None required where adequate ventilation is provided. If airborne concentrations are above the applicable exposure limits, use NIOSH/MSHA approved respiratory protection.
Thermal Hazards:	Not applicable
Environmental exposure controls:	No data available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Appearance:	No data available
Colour:	No data available
Odour:	Mild
Odour threshold:	No data available
pH:	Not applicable
Melting Point/Freezing Point (°C):	
Melting point (°C):	No data available
Freezing point (°C):	No data available
Initial boiling point and boiling range (°C):	65
Flash point (°C):	11
Evaporation Rate (water = 1):	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	
Upper flammable or explosive limit, % in air:	36
Lower flammable or explosive limit, %	6

in air:

Vapour pressure:	No data available
Vapor Density (Air=1):	1.1
Relative density (water = 1):	0.791 - 0.792 g/cm3 at 20 °C
Solubility(ies):	Moderate; 50-99%
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature (°C):	464
Decomposition temperature (°C):	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available

9.2 Other information:

Volatile Organic Chemicals:	99.9
Bulk density:	6.676

SECTION 10: Stability and reactivity

10.1 Reactivity:	Not expected to be reactive
10.2 Chemical stability:	Stable under normal conditions.
10.3 Possibility of hazardous reactions:	None expected under standard conditions of storage
10.4 Conditions to avoid:	No data available
10.5 Incompatible materials:	Strong oxidizing agents
10.6 Hazardous decomposition products:	Carbon dioxide, Carbon monoxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

Acute toxicity:

Chemical Name	ORAL LD50 (rat)	DERMAL LD50 (rabbit)	INHALATION LC50 (rat)
methanol	No data available	No data available	INHALATION LC50-8H Rat 22500 ppm

Classification has been based on toxicological information of the components in Section 3.

Skin corrosion/irritation:
Based on available data, the classification criteria are not met.

Serious eye damage/irritation:
Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation:
Based on available data, the classification criteria are not met.

Germ cell mutagenicity:
Based on available data, the classification criteria are not met.

Carcinogenicity:
Classification has been based on toxicological information of the components in Section 3.

Reproductive toxicity:
Based on available data, the classification criteria are not met.

STOT-single exposure:
Classification has been based on toxicological information of the components in Section 3.

STOT-repeated exposure:
Based on available data, the classification criteria are not met.

Aspiration hazard:
Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1 Toxicity: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife.

Ecological Toxicity Data:

Chemical Name	CAS #	Aquatic EC50 Crustacea	Aquatic ERC50 Algae	Aquatic LC50 Fish
No data available				

12.2 Persistence and degradability: Biodegrades slowly.
12.3 Bioaccumulative potential: No data available
12.4 Mobility in soil: No data available
12.5 Results of PBT and vPvB assessment: No data available

12.6 Other adverse effects: None Known

12.7 Additional information: No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods:

Disposal methods: Spent or discarded material is a hazardous waste.
Dispose of by incineration following Federal, State, Local, or Provincial regulations.

Waste codes / waste designations according to LoW: No data available

SECTION 14: Transport information

International carriage of dangerous goods by road (ADR), rail or inland waterways:

14.1 UN number: UN1230

14.2 UN proper shipping name: Methanol

14.3 Transport hazard class(es): 3(6.1)

14.4 Packing group: II

International carriage of dangerous goods by air (IATA):

14.1 UN number: UN1230

14.2 UN proper shipping name: Methanol

14.3 Transport hazard class(es): 3(6.1)

14.4 Packing group: II

14.5 Environmental hazards: Yes

14.6 Special precautions for user: No data available

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code: No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

Chemical Name	EINECS	SVHC
methanol	Yes	No

benz (a) anthracene	Yes	No

15.2 Chemical Safety Assessment No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: Other information

Revision Date: 01-08-2019

Indication of changes: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

Abbreviations and acronyms:

CAS = Chemical Abstract Service
DNEL= Derivative No Effect Level
EC= European Community
EINECS = European Inventory of Existing Chemical Substances
MSHA = Mine Safety Health Administration
NIOSH = National Institute of Occupational Safety & Health
OEL = Occupational Exposure Limit
PBT= Persistent, Bioaccumulative, Toxic
PNEC= Predicted No Effect Concentration
SCOEL= Scientific Committee on Occupational Exposure Limits
TLV = Threshold Limit Value
TWA= Time Weighted Average
vPvB= Very Persistent, Very Bioaccumulative
Wt.% = Weight Percent

Key literature references and sources for data: No data available

Hazard phrase(s) referenced in section 3

H350 - May cause cancer.
H225 - Highly flammable liquid and vapour
H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H370 - Causes damage to organs
H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements:

Prevention:

P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.

	P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P233 - Keep container tightly closed.
	P240 - Ground/bond container and receiving equipment.
	P241 - Use explosion-proof electrical/ventilating/lighting equipment.
	P242 - Use only non-sparking tools.
	P243 - Take precautionary measures against static discharge.
	P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
	P264 - Wash thoroughly after handling.
	P270 - Do not eat, drink or smoke when using this product.
	P273 - Avoid release to the environment.
	P280 - Wear protective gloves/protective clothing/eye protection/face protection.
Response:	P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.
	P302+P352 - If on skin: Wash with plenty of water.
	P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P308+P311 - IF exposed or concerned: Call a POISON CENTER/doctor.
	P308+P313 - IF exposed or concerned: Get medical advice/ attention.
	P312 - Call a POISON CENTER/doctor if you feel unwell.
	P321 - Specific treatment (see Sections 4 to 8 on this SDS and any additional information on this label).
	P330 - Rinse mouth.
	P361+P364 - Take off immediately all contaminated clothing and wash it before reuse.
	P370+P378 - In case of fire: Use an appropriate extinguisher (see section 5) to extinguish.
	P391 - Collect spillage.
Storage:	P233 - Keep container tightly closed.
	P403+P235 - Store in a well-ventilated place. Keep cool.
	P405 - Store locked up.
Disposal:	P501 - Dispose of contents/container to a suitable disposal site in accordance with local/national/international regulations.

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Safety Data Sheet
acc. to OSHA HCS

Printing date 03/24/2019 Version Number 2 Reviewed on 03/21/2019

*
1 Identification

· **Product identifier**

· **Trade name: Benzo(a)pyrene**

· **Part number:** RAH-010, RAH-010-10MG
· **CAS Number:**
50-32-8
· **EC number:**
200-028-5
· **Index number:**
601-032-00-3
· **Application of the substance / the mixture** Reagents and Standards for Analytical Chemical Laboratory Use

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Agilent Technologies, Inc.
5301 Stevens Creek Blvd.
Santa Clara, CA 95051 USA

· **Information department:**
Telephone: 800-227-9770
e-mail: pdl-msds_author@agilent.com
· **Emergency telephone number:** CHEMTREC®: 1-800-424-9300

*
2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS08 Health hazard

Muta. 1B H340 May cause genetic defects.
Carc. 1B H350 May cause cancer.
Repr. 1B H360 May damage fertility or the unborn child.

GHS07

Skin Sens. 1 H317 May cause an allergic skin reaction.

· **Label elements**
· **GHS label elements** The substance is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07

GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
benzo[a]pyrene
· **Hazard statements**
May cause an allergic skin reaction.

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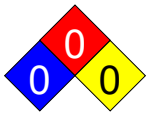
Trade name: Benzo(a)pyrene

(Contd. of page 1)

May cause genetic defects.
May cause cancer.
May damage fertility or the unborn child.

· **Precautionary statements**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water.
IF exposed or concerned: Get medical advice/attention.
Specific treatment (see on this label).
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**



Health = 0
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = *0
Fire = 0
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Substances**
· **CAS No. Description**
50-32-8 benzo[a]pyrene
· **Identification number(s)**
· **EC number:** 200-028-5
· **Index number:** 601-032-00-3

4 First-aid measures

· **Description of first aid measures**
· **After inhalation:**
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:** Rinse opened eye for several minutes under running water.

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Trade name: Benzo(a)pyrene

(Contd. of page 2)

· **After swallowing:** If symptoms persist consult doctor.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Not required.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
· **Protective Action Criteria for Chemicals**

· **PAC-1:**
0.6 mg/m³
· **PAC-2:**
120 mg/m³
· **PAC-3:**
700 mg/m³

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
· **Information about protection against explosions and fires:** Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Keep receptacle tightly sealed.

(Contd. on page 4)

(Contd. of page 3)

· **Specific end use(s)** No further relevant information available.

*

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
50-32-8 benzo[a]pyrene	
PEL	Long-term value: 0.2 mg/m³ see Coal tar pitch volatiles
REL	Long-term value: 0.1 mg/m³ Coal tar pitch volatile; Pocket Guide Apps. A+C
TLV	L; BEIp

· **Ingredients with biological limit values:**	
50-32-8 benzo[a]pyrene	
BEI	- Medium: urine Time: end of shift at end of workweek Parameter: 1-Hydroxypyrene with hydrolysis (nonquantitative)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
· **Breathing equipment:**
When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not needed.
Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.
· **Protection of hands:**
Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.
· **Material of gloves**
For normal use: nitrile rubber, 11-13 mil thickness
For direct contact with the chemical: butyl rubber, 12-15 mil thickness
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material**
For normal use: nitrile rubber: 1 hour
For direct contact with the chemical: butyl rubber: >4 hours

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Trade name: Benzo(a)pyrene

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· **Eye protection:**

Tightly sealed goggles

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9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Solid
Color:	Not determined.
· **Odor:**	Characteristic
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Change in condition**	
Melting point/Melting range:	179 °C (354.2 °F)
Boiling point/Boiling range:	495 °C (923 °F)
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Product is not flammable.
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density at 20 °C (68 °F):**	1.35 g/cm³ (11.26575 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Insoluble.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gal
Solids content:	100.0 %

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· **Other information** No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** Sensitization possible through skin contact.
· **Additional toxicological information:**

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
1

· **NTP (National Toxicology Program)**
R

· **OSHA-Ca (Occupational Safety & Health Administration)**
Substance is not listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 3 (Assessment by list): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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Trade name: Benzo(a)pyrene

(Contd. of page 6)

· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

*

14 Transport information

· **UN-Number**	
· **DOT, IMDG, IATA**	UN3077
· **UN proper shipping name**	
· **DOT**	Environmentally hazardous substance, solid, n.o.s. (benzo[a] pyrene)
· **IMDG**	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (benzo[a]pyrene), MARINE POLLUTANT
· **IATA**	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (benzo[a]pyrene)
· **Transport hazard class(es)**	
· **DOT, IMDG, IATA**	
· **Class**	9 Miscellaneous dangerous substances and articles
· **Label**	9
· **Packing group**	
· **DOT, IMDG, IATA**	III
· **Environmental hazards:**	
· **Marine pollutant:**	Yes (DOT) Symbol (fish and tree)
· **Special marking (IATA):**	Symbol (fish and tree)
· **Special precautions for user**	Warning: Miscellaneous dangerous substances and articles
· **Danger code (Kemler):**	90
· **EMS Number:**	F-A,S-F
· **Stowage Category**	A
· **Stowage Code**	SW23 When transported in BK3 bulk container, see 7.6.2.12 and 7.7.3.9.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.

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Trade name: Benzo(a)pyrene

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· **Transport/Additional information:**

· **DOT**

· **Quantity limitations**	On passenger aircraft/rail: No limit On cargo aircraft only: No limit
· **Hazardous substance:**	1 lbs, 0.454 kg
· **Remarks:**	Special marking with the symbol (fish and tree).

· **IMDG**

· **Limited quantities (LQ)**	5 kg
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g
· **UN "Model Regulation":**	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (BENZO[A]PYRENE), 9, III

*
15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**
Substance is not listed.

· **Section 313 (Specific toxic chemical listings):**
Substance is listed.

· **TSCA (Toxic Substances Control Act):**
Substance is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
Substance is listed.

· **Chemicals known to cause reproductive toxicity for females:**
Substance is not listed.

· **Chemicals known to cause reproductive toxicity for males:**
Substance is not listed.

· **Chemicals known to cause developmental toxicity:**
Substance is not listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**
CaH

· **TLV (Threshold Limit Value established by ACGIH)**
A2

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
Substance is listed.

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· **National regulations:**
· **Additional classification according to Decree on Hazardous Materials:**
Carcinogenic hazardous material group I (extremely dangerous).
Carcinogenic hazardous material group II (very dangerous).
Carcinogenic hazardous material group III (dangerous).

· **Information about limitation of use:**
Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

*
16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

· **Department issuing SDS:** Document Control / Regulatory
· **Contact:** regulatory@ultrasci.com
· **Date of preparation / last revision** 03/24/2019 / 1
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Skin Sens. 1: Skin sensitisation – Category 1
Muta. 1B: Germ cell mutagenicity – Category 1B
Carc. 1B: Carcinogenicity – Category 1B
Repr. 1B: Reproductive toxicity – Category 1B
· *** Data compared to the previous version altered.**

Safety Data Sheet

Revision Date: 08/13/18
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31272 / Benzo(b)fluoranthene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	10
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:

GHS Classification:	Carcinogenicity Category 1B Flammable Liquid Category 2 Serious Eye Damage/Eye Irritation Category 2 Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Causes serious eye irritation. May cause drowsiness or dizziness. May cause cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor/physician if you feel unwell. If eye irritation persists: Get medical advice/attention. In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Acetone	67-64-1	200-662-2	99.9
benzo (b) fluoranthene	205-99-2	205-911-9	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Fire and/or Explosion Hazards: Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained toxic breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal

evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Acetone	67-64-1	2500 ppm IDLH (10% LEL)	750 ppm STEL; 1782 mg/m3 STEL	500 ppm TWA; 1188 mg/m3 TWA	1000 ppm TWA; 2400 mg/m3 TWA
benzo (b) fluoranthene	205-99-2	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.
Respiratory Protection:	No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.
Skin Protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work
Medical Conditions Aggravated By Exposure:	Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Depends upon product selection
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.0 (air = 1)
Boiling Point (°C):	56.05 °C at 1013.25 hPa
Melting Point (°C):	-95.4 °C Melting Point
Flash Point (°F):	39
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	465 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.7845 g/cm3 at 25 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Complete; 100%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	0
Molecular Weight:	58.08

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Strong acids
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion

Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Respiratory Tract, Skin

Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.

Eye Contact: Can cause minor irritation, tearing and reddening.

Ingestion Irritation: May be harmful if swallowed.

Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Acetone	67-64-1	Dermal LD50 Rabbit >15700 mg/kg; Inhalation LC50 Rat 50100 mg/m3 8 h; Oral LD50 Rat 5800 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Benzo(b)fluoranthene	205-99-2	Present

ACGIH:

Chemical Name	CAS No.	
Benzo[b]fluoranthene	205-99-2	A2 - Suspected Human Carcinogen
Acetone	67-64-1	A4 - Not Classifiable as a Human Carcinogen

NIOSH:

Chemical Name	CAS No.
No data available	

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	205-99-2	Group 2B

12. ECOLOGICAL INFORMATION

Overview: This material is not expected to be harmful to the ecology.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Dispose of by incineration following Federal, State, Local, or Provincial regulations.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

International:

IATA Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Acetone	67-64-1	X	-	-	X
benzo (b) fluoranthene	205-99-2	X	X	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Benzo[b]fluoranthene	205-99-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Acetone	67-64-1	X	X	X	X
benzo (b) fluoranthene	205-99-2	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 12/08/16

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

Safety Data Sheet

Revision Date: 07/15/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31274 / Benzo(k)fluoranthene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	12
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:

GHS Classification:
Carcinogenicity Category 1B
Flammable Liquid Category 2
Serious Eye Damage/Eye Irritation Category 2
Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 3

GHS Signal Word:
Danger

GHS Hazard:
Highly flammable liquid and vapour.
Causes serious eye irritation.
May cause drowsiness or dizziness.
May cause cancer.

GHS Precautions:

Safety Precautions:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilation and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wash hands and skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Measures:
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER or doctor/physician if you feel unwell.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Acetone	67-64-1	200-662-2	99.9
benzo (k) fluoranthene	207-08-9	205-916-6	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Fire and/or Explosion Hazards: Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained toxic breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal

evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions: Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment

Storage Technical Measures and Conditions: Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Acetone	67-64-1	2500 ppm IDLH (10% LEL)	750 ppm STEL; 1782 mg/m3 STEL	500 ppm TWA; 1188 mg/m3 TWA	1000 ppm TWA; 2400 mg/m3 TWA
benzo (k) fluoranthene	207-08-9	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures: Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.

Respiratory Protection: No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required.

Eye Protection: Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.

Skin Protection: Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work

Medical Conditions Aggravated By Exposure: Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color: Depends upon product selection
Odor: Strong
Physical State: No data available
pH: Not applicable
Vapor Pressure: No data available
Vapor Density: 2.0 (air = 1)
Boiling Point (°C): 480 °C 56.05 °C at 1013.25 hPa
Melting Point (°C): -95.4 °C Melting Point
Flash Point (°F): 39
Flammability: Highly Flammable
Upper Flammable/Explosive Limit, % in air: No data available
Lower Flammable/Explosive Limit, % in air: No data available
Autoignition Temperature (°C): 465 deg C
Decomposition Temperature (°C): No data available
Specific Gravity: 0.7845 g/cm3 at 25 °C
Evaporation Rate: No data available
Odor Threshold: ND
Solubility: Complete; 100%
Partition Coefficient: n-octanol in water: No data available
VOC % by weight: 99.9
Molecular Weight: 58.08

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.
Conditions to Avoid: None known.
Materials to Avoid / Chemical Incompatiability: Strong oxidizing agents Strong acids
Hazardous Decomposition Products: Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, Skin Contact, Eye Contact, Ingestion

Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Respiratory Tract, Skin

Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.

Eye Contact: Can cause minor irritation, tearing and reddening.

Ingestion Irritation: May be harmful if swallowed.

Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Acetone	67-64-1	Dermal LD50 Rabbit >15700 mg/kg; Inhalation LC50 Rat 50100 mg/m3 8 h; Oral LD50 Rat 5800 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Benzo(k)fluoranthene	207-08-9	Present

ACGIH:

Chemical Name	CAS No.	
Acetone	67-64-1	A4 - Not Classifiable as a Human Carcinogen

NIOSH:

Chemical Name	CAS No.
No data available	

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	207-08-9	Group 2B

12. ECOLOGICAL INFORMATION

Overview: This material is not expected to be harmful to the ecology.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Dispose of by incineration following Federal, State, Local,

or Provincial regulations.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

International:

IATA Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Acetone	67-64-1	X	-	-	X
benzo (k) fluoranthene	207-08-9	X	X	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Benzo[k]fluoranthene	207-08-9	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Acetone	67-64-1	X	X	X	X
benzo (k) fluoranthene	207-08-9	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 06/15/18
Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References: No data available
Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

SAFETY DATA SHEET

Revision Date 24-Dec-2021 **Revision Number** 4

1. Identification

Product Name **Cadmium**

Cat No. : **C3-500**

CAS No 7440-43-9
Synonyms No information available

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable solids	Category 2
Acute oral toxicity	Category 4
Acute dermal toxicity	Category 4
Acute Inhalation Toxicity - Dusts and Mists	Category 2
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Kidney, Blood.	
Combustible dust	Yes

Label Elements

Signal Word

Danger

Hazard Statements
Flammable solid
May form combustible dust concentrations in air
Fatal if inhaled
Harmful if swallowed
Harmful in contact with skin
May cause respiratory irritation
Suspected of causing genetic defects
May cause cancer
Suspected of damaging fertility. Suspected of damaging the unborn child
Causes damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting equipment
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Skin
IF ON SKIN: Wash with plenty of soap and water
Wash contaminated clothing before reuse
Call a POISON CENTER or doctor/physician if you feel unwell
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Fire
Fight fire with normal precautions from a reasonable distance
Evacuate area
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer and Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Cadmium	7440-43-9	100

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects None reasonably foreseeable. . Kidney disorders: May cause harm to the unborn child: Blood disorders

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available

Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Fine dust dispersed in air may ignite. Dust can form an explosive mixture with air. Pyrophoric properties of solids and liquids. Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Toxic fumes.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
4	1	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust

formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Store under an inert atmosphere. Incompatible Materials. Strong oxidizing agents. Strong acids. Sulfur oxides.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Cadmium	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	Ceiling: 0.3 mg/m³ Ceiling: 0.6 mg/m³ (Vacated) STEL: 0.3 ppm TWA: 0.1 mg/m³ TWA: 0.2 mg/m³ TWA: 5 µg/m³	IDLH: 9 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures When using do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes or clothing. Wash hands before breaks and immediately after handling the product. Keep away from food, drink and animal feeding stuffs.

9. Physical and chemical properties

Physical State Solid

Appearance	Silver
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	321 °C / 609.8 °F
Boiling Point/Range	765 °C / 1409 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	8.64 @ 25°C
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Cd
Molecular Weight	112.40

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under recommended storage conditions. Moisture sensitive. Air sensitive.

Conditions to Avoid Incompatible products. Excess heat. Avoid dust formation. Exposure to air or moisture over prolonged periods.

Incompatible Materials Strong oxidizing agents, Strong acids, Sulfur oxides

Hazardous Decomposition Products Toxic fumes

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Cadmium	LD50 = 2330 mg/kg (Rat)	Not listed	LC50 = 25 mg/m³ (Rat) 30 min

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Cadmium	7440-43-9	Group 1	Known	A2	X	A2

IARC (International Agency for Research on Cancer)	*IARC (International Agency for Research on Cancer)* *Group 1 - Carcinogenic to Humans* *Group 2A - Probably Carcinogenic to Humans* *Group 2B - Possibly Carcinogenic to Humans*
NTP: (National Toxicity Program)	*NTP: (National Toxicity Program)* *Known - Known Carcinogen* *Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen*
ACGIH: (American Conference of Governmental Industrial Hygienists)	*A1 - Known Human Carcinogen* *A2 - Suspected Human Carcinogen* *A3 - Animal Carcinogen* *ACGIH: (American Conference of Governmental Industrial Hygienists)*

Mutagenic Effects Possible risk of irreversible effects

Reproductive Effects Possible risk of impaired fertility. May cause harm to the unborn child.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure Kidney Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Kidney disorders: May cause harm to the unborn child: Blood disorders

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Cadmium	Not listed	LC50: 0.0004 - 0.003 mg/L, 96h (Pimephales promelas) LC50: = 0.016 mg/L, 96h (Oryzias latipes) LC50: = 21.1 mg/L, 96h flow-through (Lepomis macrochirus) LC50: = 0.24 mg/L, 96h static (Cyprinus carpio) LC50: = 4.26 mg/L, 96h semi-static (Cyprinus carpio) LC50: = 0.002 mg/L, 96h	Not listed	EC50: = 0.0244 mg/L, 48h Static (Daphnia magna)

		(Cyprinus carpio) LC50: = 0.006 mg/L, 96h static (Oncorhynchus mykiss) LC50: = 0.003 mg/L, 96h flow-through (Oncorhynchus mykiss)		

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN2930
Proper Shipping Name	Toxic solid, flammable, organic, n.o.s.
Technical Name	Cadmium
Hazard Class	6.1
Subsidiary Hazard Class	4.1
Packing Group	I

TDG

UN-No	UN2930
Proper Shipping Name	Toxic solid, flammable, organic, n.o.s.
Hazard Class	6.1
Subsidiary Hazard Class	4.1
Packing Group	I

IATA

UN-No	UN2930
Proper Shipping Name	Toxic solid, flammable, organic, n.o.s.
Hazard Class	6.1
Subsidiary Hazard Class	4.1
Packing Group	I

IMDG/IMO

UN-No	UN2930
Proper Shipping Name	Toxic solid, flammable, organic, n.o.s.
Hazard Class	6.1
Subsidiary Hazard Class	4.1
Packing Group	I

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Cadmium	7440-43-9	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Cadmium	7440-43-9	X	-	231-152-8	X	X		X	X	KE-04397

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Cadmium	7440-43-9	100	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Cadmium	-	-	X	X

Clean Air Act

OSHA - Occupational Safety and Health Administration Not applicable

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Cadmium	5 µg/m³ TWA 2.5 µg/m³ Action Level	-

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Cadmium	10 lb	-

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Cadmium	7440-43-9	Carcinogen Developmental Male Reproductive	0.05 µg/day	Developmental Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Cadmium	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Cadmium	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 23. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - 231-152-8 - Carcinogenic, Article 57a;Specific target organ toxicity after repeated exposure, Article 57(f) - human health

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

https://echa.europa.eu/authorisation-list
https://echa.europa.eu/substances-restricted-under-reach
https://echa.europa.eu/candidate-list-table

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Cadmium	7440-43-9	Listed	Not applicable	Not applicable	0.01% (Max. Conc.)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Cadmium	7440-43-9	Not applicable	Not applicable	Not applicable	Annex I - Y26

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 24-Dec-2021
Print Date 24-Dec-2021
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Version 6.4
Revision Date 04/28/2022
Print Date 08/12/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Calcium silicate

Product Number : 372668
Brand : Aldrich
CAS-No. : 10101-39-0

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture.

2.2 GHS Label elements, including precautionary statements

Not a hazardous substance or mixture.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : Calcium metasilicate
Calcium silicon oxide
Silicon calcium oxide

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Formula	:	CaO_3Si
Molecular weight	:	116.16 g/mol
CAS-No.	:	10101-39-0
EC-No.	:	233-250-6

Component	Classification	Concentration
Calcium silicate		
		<= 100 %

SECTION 4: First aid measures

4.1 Description of first-aid measures

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact
Wash off with soap and plenty of water.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Calcium oxide
silicon oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing vapors, mist or gas.
For personal protection see section 8.

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6.2 Environmental precautions
No special environmental precautions required.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Advice on protection against fire and explosion
Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures
General industrial hygiene practice.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place.

Storage class
Storage class (TRGS 510): 13: Non Combustible Solids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Calcium silicate	10101-39-0	PEL	10 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		PEL	5 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

8.2 Exposure controls

Appropriate engineering controls
General industrial hygiene practice.

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Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
No special environmental precautions required.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	No data available
f)	Initial boiling point and boiling range	No data available
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	2.900 g/cm3
	Relative density	No data available

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n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: No data available
Dermal: No data available
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

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Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: VV9170000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

Further information
Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

Calcium silicate	CAS-No. 10101-39-0	Revision Date

New Jersey Right To Know Components

Calcium silicate	CAS-No. 10101-39-0	Revision Date

California Prop. 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

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SECTION 16: Other information

Further information

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Version: 6.4 Revision Date: 04/28/2022 Print Date: 08/12/2023

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Material Safety Data Sheet
Chrysene, 98%

MSDS# 95251

Section 1 - Chemical Product and Company Identification

MSDS Name:	Chrysene, 98%
Catalog Numbers:	AC224140000, AC224140010, AC224140050, AC224145000
Synonyms:	1,2-Benzophenanthrene; Benzo(a)phenanthrene; 1,2,5,6-Dibenzonaphthalene.
Company Identification:	Acros Organics BVBA Janssen Pharmaceuticalaan 3a 2440 Geel, Belgium
Company Identification: (USA)	Acros Organics One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	800-ACROS-01
For information in Europe, call:	+32 14 57 52 11
Emergency Number, Europe:	+32 14 57 52 99
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300
CHEMTREC Phone Number, Europe:	703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#:	218-01-9
Chemical Name:	Chrysene
%:	98
EINECS#:	205-923-4

Hazard Symbols: T

Risk Phrases: 45 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Caution! May cause respiratory tract irritation. May cause eye and skin irritation. May cause cancer in humans. Target Organs: Liver, skin.

Potential Health Effects

Eye:	May cause eye irritation.
Skin:	May cause skin irritation.
Ingestion:	May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation:	May cause respiratory tract irritation.
Chronic:	May cause cancer according to animal studies.

Section 4 - First Aid Measures

Eyes:	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: Not available.

Flash Point: Not applicable.

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: ; flammability: 1; instability: ;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Avoid breathing dust.

Storage: Store in a tightly closed container. Store in a cool, dry area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Chrysene	0.2 mg/m3 TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m3 TWA	0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Chrysene: 0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches)

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

Exposure Limits

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State:	Solid
Color:	very light beige
Odor:	Not available
pH:	Not available
Vapor Pressure:	Not available
Vapor Density:	Not available
Evaporation Rate:	Not available
Viscosity:	Not available
Boiling Point:	448 deg C @ 760 mm Hg (838.40°F)
Freezing/Melting Point:	250-255 deg C
Decomposition Temperature:	Not available
Solubility in water:	insoluble
Specific Gravity/Density:	
Molecular Formula:	C18H12
Molecular Weight:	228.29

Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Dust generation.
Incompatibilities with Other Materials	Not available
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide.
Hazardous Polymerization	Has not been reported.

Section 11 - Toxicological Information

RTECS#: CAS# 218-01-9: GC0700000

LD50/LC50: RTECS: Not available.

Carcinogenicity: Chrysene - ACGIH: A1 - Confirmed Human Carcinogen (Coal tar pitches). California: carcinogen, initial date 1/1/90 NTP: Known carcinogen (Coal tar pitches). IARC: Group 1 carcinogen (Coal tar pitches).

Other: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity: Water flea LC50 = 1.9 mg/L; 2 Hr.; Unspecified

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: Please contact Fisher Scientific for shipping information
Hazard Class:
UN Number:
Packing Group:
Canada TDG
Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

USA RQ: CAS# 218-01-9: 100 lb final RQ; 45.4 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T

Risk Phrases:

R 45 May cause cancer.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 218-01-9: Not available

Canada

CAS# 218-01-9 is listed on Canada's DSL List

Canadian WHMIS Classifications: D2A

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 218-01-9 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 218-01-9 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 6/30/1999

Revision #6 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

COPPER METAL
SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product Identity: Copper Metal.

Trade Names and Synonyms: Cu-CATH-1; Copper Cathode (Higher Purity Grade).

Manufacturer:
Teck Advanced Materials Inc.
13670 Danielson Street
Suite H & I
Poway, CA 92064
Emergency Telephone: 858-391-2935

Supplier:
Teck Advanced Materials Inc.
13670 Danielson Street
Suite H & I
Poway, CA 92064

Preparer:
Teck Metals Ltd.
Suite 3300 – 550 Burrard Street
Vancouver, British Columbia
V6C 0B3

Date of Last Review: June 19, 2015.

Date of Last Edit: June 19, 2015.

Product Use: Copper is used in the manufacture of bronzes, brass, other copper alloys, and electrical conductors.

SECTION 2. HAZARDS IDENTIFICATION

CLASSIFICATION:

NOTE: In the form in which it is sold, this product is not regulated as a Hazardous Product in the U.S. or Canada. This Safety Data Sheet is provided for information purposes only.

Health		Physical	Environmental
Acute Toxicity (Oral, Inhalation)	– Does not meet criteria	Does not meet criteria for any Physical Hazard	Aquatic Toxicity – (Short Term/Long Term) Does not meet any criteria
Skin Corrosion/Irritation	– Does not meet criteria		
Eye Damage/Eye Irritation	– Does not meet criteria		
Respiratory or Skin Sensitization	– Does not meet criteria		
Mutagenicity	– Does not meet criteria		
Carcinogenicity	– Does not meet criteria		
Reproductive Toxicity	– Does not meet criteria		
Specific Target Organ Toxicity:			
Acute Exposure	– Does not meet criteria		
Chronic Exposure	– Does not meet criteria		

LABEL:

Symbols: None required	**Signal Word:** None required
Hazard Statements	**Precautionary Statements:**
None required	None required

Emergency Overview: Reddish metal that does not burn in bulk. Copper dust clouds will not explode readily, if at all, in air. Due to its high melting point, molten copper metal is unlikely to occur in most fire situations. This metal is relatively non-toxic and poses little immediate hazard to personnel or the environment in an emergency situation.

Potential Health Effects: Inhalation of dust may result in irritation of the nasal mucous membranes. Inhalation of copper oxide fumes may cause irritation of the upper respiratory tract and may result in a form of metal fume fever, characterized by flu-like symptoms such as chills, fever, nausea, and vomiting. Ingestion of copper metal may cause metallic taste and gastrointestinal irritation. Copper particles embedded in the eye may cause redness, pain and discoloration of ocular tissue. Direct skin contact may result in irritation in some workers. Discoloration of the skin has been observed from handling copper, but does not indicate an actual injury. Copper is not listed as a carcinogen by OSHA, the NTP, the ACGIH, IARC, or the EU (see Toxicological Information, Section 11).

Potential Environmental Effects: Copper is relatively insoluble in water and, therefore, likely has low bioavailability. However, long-term exposure in aquatic and terrestrial environments or processing of the product can lead to the release of the constituent copper in more bioavailable forms. These bioavailable forms have the potential to yield toxic effects on aquatic organisms (see Ecological Information, Section 12).

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS Registry No.	CONCENTRATION (% wgt/wgt)
Copper	7440-50-8	>99.9%

Note: See Section 8 for Occupational Exposure Guidelines.

SECTION 4. FIRST AID MEASURES

Eye Contact: *Symptoms: Mild eye irritation, redness.* Do not allow victim to rub eye(s). Let the eye(s) water naturally for a few minutes. If particle/dust does not dislodge, flush with lukewarm, gently flowing water for five minutes or until particle/dust is removed, while holding eyelid(s) open. If irritation persists, immediately obtain medical attention. DO NOT attempt to manually remove anything stuck to the eye, but rather seek immediate medical attention in this case.

Skin Contact: *Symptoms: Soiling of skin.* Dust: No health effects expected. If irritation does occur, flush with lukewarm, gently flowing water and mild soap for five minutes or until the product is removed. If skin irritation persists or if you feel unwell, obtain medical advice. Molten Metal: Flush contact area to solidify and cool but do not attempt to remove encrusted material or clothing. Cover burns and seek medical attention immediately.

Inhalation: *Symptoms: Coughing and irritation in heavy dust/fume clouds.* If symptoms are experienced, remove source of contamination or move victim from exposure area to fresh air. Get medical advice/attention if you feel unwell or are concerned. NOTE: Metal fume fever may develop 3-10 hours after exposure to copper fume. If symptoms of metal fume fever (flu-like symptoms) develop, obtain medical attention.

Ingestion: *Symptoms: Metallic taste, stomach upset.* Rinse mouth. If irritation or discomfort occurs, obtain medical advice.

SECTION 5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Massive metal is not considered a fire or explosion hazard. Finely-divided copper metal dust or powder has also been demonstrated to be non-flammable in laboratory testing. Explosions may occur however upon contact with certain incompatible materials (see Stability and Reactivity, Section 10).

Extinguishing Media: Use any means of extinction appropriate for the surrounding fire conditions such as water spray, carbon dioxide, dry chemical, or foam.

Fire Fighting: If possible, move solid materials from fire area. Cool any materials that are exposed to heat or flames by the application of water streams until well after the fire has been extinguished. Copper metal has a high melting point, and is unlikely to melt except in the most extreme fire conditions. If molten metal is present, do not use direct water streams on fires, due to the risk of a steam explosion that could potentially eject molten metal uncontrollably. Use a fine water mist on the front-running edge of the spill and on the top of the molten metal to cool and solidify it. Fire fighters must be fully trained and wear full protective clothing including an approved, self-contained breathing apparatus which supplies a positive air pressure within a full face piece mask.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Procedures for Cleanup: Control source of spillage if possible to do so safely. Clean up spilled material immediately, observing precautions in Section 8, Personal Protection. Molten metal should be allowed to cool and harden before cleanup. Once solidified wear gloves, pick up and return to process. Powder or dust should be cleaned up using methods which will minimize dust generation (e.g., vacuum solids, dampen material and shovel or wet sweep). Return uncontaminated spilled material to the process if possible. Place contaminated material in suitable labelled containers for later recovery in view of the commercial value of copper. Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

Personal Precautions: Persons responding to an accidental release should wear protective clothing, gloves and a respirator in the event of a molten metal spill (see also Section 8). Close-fitting safety goggles may be necessary in some circumstances to prevent eye contact with dust and fume. Where molten metal is involved, wear heat-resistant gloves and suitable clothing for protection from hot-metal splash and radiant heat.

Environmental Precautions: Copper compounds, while not readily bioavailable in the environment, have the potential to pose ecological effects to aquatic life forms under certain chemical conditions. Releases of the product to water and soil should, therefore, be prevented.

SECTION 7. HANDLING AND STORAGE

Store copper in a dry, covered area. Copper cathodes suspected of containing moisture should be THOROUGHLY DRIED before being added to a molten bath. Cathodes may contain cavities that collect moisture. Entrained moisture will expand explosively when immersed in a molten bath and potentially spatter molten metal out of the bath.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Guidelines:

Component	ACGIH TLV	OSHA PEL	NIOSH REL
Copper (Dust)	1 mg Cu/m^3	1 mg Cu/m^3	1 mg Cu/m^3
Copper (Fume)	0.2 mg Cu/m^3	0.1 mg Cu/m^3	0.1 mg Cu/m^3

NOTE: OEGs for individual jurisdictions may differ from those given above. Check with local authorities for the applicable OEGs in your jurisdiction.
ACGIH - American Conference of Governmental Industrial Hygienists; OSHA - Occupational Safety and Health Administration; NIOSH - National Institute for Occupational Safety and Health. TLV – Threshold Limit Value, PEL – Permissible Exposure Limit, REL – Recommended Exposure Limit.

NOTE: The selection of the necessary level of engineering controls and personal protective equipment will vary depending upon the conditions of use and the potential for exposure. The following are therefore only general guidelines that may not fit all circumstances. Control measures to consider include:

Ventilation: Use adequate local or general ventilation to maintain the concentration of copper (as either dust or fumes) in the working environment well below recommended occupational exposure limits. Supply sufficient replacement air to make up for air removed by the exhaust system.

Protective Clothing: Gloves and coveralls or other work clothing are recommended to prevent prolonged or repeated direct skin contact when copper is processed. Appropriate eye protection should be worn where fume or dust is generated. Where hot or molten metal is handled, heat resistant gloves, goggles or face shield, and clothing to protect from hot metal splash and radiant heat should be worn. Safety type boots are recommended.

Respirators: Where copper dust or fumes are generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH-approved respiratory protection equipment (a 42CFR84 Class N, R or P-95 particulate filter cartridge as a minimum).

General Hygiene Considerations: Always practice good personal hygiene. Refrain from eating, drinking, or smoking in work areas. Thoroughly wash hands before eating, drinking, or smoking in appropriate, designated areas.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Reddish metal	**Odour:** None	**Odour Threshold:** Not Applicable	**pH:** Not Applicable
Vapour Pressure: 1 mm Hg at 1083°C Negligible @ 20°C	**Vapour Density:** Not Applicable	**Melting Point/Range:** 1083°C	**Boiling Point/Range:** 2595°C
Relative Density (Water = 1)**:** 8.94	**Evaporation Rate:** Not Applicable	**Coefficient of Water/Oil Distribution:** Not Applicable	**Solubility:** Insoluble in water
Flash Point: None	**Flammable Limits (LEL/UEL):** Not Flammable	**Auto-ignition Temperature:** None	**Decomposition Temperature:** None

SECTION 10. STABILITY AND REACTIVITY

Stability & Reactivity: Copper is stable and not considered reactive under normal temperatures and pressures. Hazardous polymerization or runaway reactions will not occur.

Incompatibilities: Copper is incompatible with nitric acid, acetylene, chlorine, fluorine, chlorine trifluoride, and peroxides. Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxide or azide compounds. Copper in finely-divided powder or granular form reacts with strong oxidants like chlorates, bromates, iodates and ammonium nitrate causing a potential explosion hazard.

Hazardous Decomposition Products: High temperature operations such as oxy-acetylene cutting, electric arc welding, arc-air gouging or overheating a molten metal bath may generate copper fumes. These fumes will contain copper oxides, which, on inhalation in sufficient quantity, can produce metal fume fever.

SECTION 11. TOXICOLOGICAL INFORMATION

General: Copper is an essential element, but can become toxic when inhaled or ingested in large doses. Most reports of acute toxicity are from suicidal attempts involving ingestion of copper sulphate. Individuals with a rare disorder called "Wilson's Disease" (estimated prevalence 0.003% of the population) are predisposed to accumulate copper and should not be occupationally exposed. However, in the form in which this product is sold it is relatively non-toxic. The major route of exposure would be through the generation and inhalation of copper oxide fume.

Acute:
Skin: Copper metal is not irritating to skin other than by direct abrasive action of metal particles on skin tissue.

Eye: Contact with dust or fume may cause local irritation. Embedded copper particles in the eye result in a brownish or green-brown discoloration of the cornea, lens and iris (chalcosis) which may progress to serious ocular complications.

Inhalation: Copper dust may be irritating to the nasal passages and the throat with a sweetish, metallic taste and excessive salivation. An intense, short-term exposure to copper fumes from cutting or welding, etc. could result in the condition called metal fume fever. The symptoms of metal fume fever generally occur within 3 to 10 hours. They may include immediate dryness and irritation of the throat, metallic taste, tightness of the chest, and coughing that may later be followed by flu-like symptoms of fever, malaise, perspiration, frontal headache, muscle cramps, low back pain, occasionally blurred vision, nausea, and vomiting. Those experiencing a single acute episode of metal fume fever generally recover slowly but without apparent residual effects.

Ingestion: Ingestion of copper metal may cause metallic taste and gastrointestinal irritation. Individuals reported to have ingested large quantities of copper salts have reported gastrointestinal effects including vomiting, diarrhea, nausea, malaise, anorexia, abdominal pain and a metallic taste in the mouth. Effects on the kidneys and liver, and even death have also been reported in severe cases of copper poisoning from ingesting soluble copper salts. However, copper is a strong emetic and spontaneous vomiting following ingestion usually limits uptake of copper.

Chronic: Prolonged exposure to copper dust or fume can cause irritation to the eye and skin. A green discoloration of the skin has been reported similar to that sometimes experienced from copper jewelry. This green discoloration may occasionally also be seen in hair (particularly notable in blonde hair), nails and teeth. A few instances of allergic contact dermatitis have been reported. Copper is not listed as a human carcinogen by the Occupational Safety and Health Administration (OSHA), the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), the American Conference of Governmental Industrial Hygienists (ACGIH) or the European Union (EU).

Animal Toxicity:

Hazardous Ingredient:	Acute Oral Toxicity:	Acute Dermal Toxicity:	Acute Inhalation Toxicity:
Copper	>5,000 mg/kg†	>2,000 mg/kg*	>5.11 mg/L‡

† LD_{50}, Mouse, Oral, ‡ LC_{50}, Rat, Inhalation, 4 hour * LD_{50}, Mouse, Dermal

SECTION 12. ECOLOGICAL INFORMATION

Copper metal is relatively insoluble in water and, therefore, generally has low bioavailability. However, long-term exposure in aquatic and terrestrial environments or processing of the product can lead to the release of the constituent copper in more bioavailable forms. These more bioavailable forms have the potential to yield toxic effects under specific chemical conditions (e.g., low pH). The mobility of the copper compounds in soluble forms is also media-dependent. They can bind with inorganic and organic ligands, reducing their mobility and bioavailability in both soil and water. Bioavailability is also regulated by other factors in the aquatic environment, such as hardness and dissolved organic carbon content.

SECTION 13. DISPOSAL CONSIDERATIONS

If material cannot be returned to process or salvage, dispose of in accordance with applicable regulations.

SECTION 14. TRANSPORT INFORMATION

No special shipping or transportation requirements in ingot form.

SECTION 15. REGULATORY INFORMATION

U.S.

INGREDIENTS LISTED ON TSCA INVENTORY..... Yes

HAZARDOUS UNDER HAZARD COMMUNICATION STANDARD..... No (CFR 1910.1200, revised March 26, 2012)

CERCLA SECTION 103 HAZARDOUS SUBSTANCES ..... Yes .....RQ: 5,000 lbs. (2270 kg.)*
*reporting not required when diameter of the pieces of solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

EPCRA SECTION 302 EXTREMELY HAZARDOUS SUBSTANCE ..... No

EPCRA SECTION 311/312 HAZARD CATEGORIES ..... No Hazard Categories Apply

EPCRA SECTION 313 TOXIC RELEASE INVENTORY:..... Copper.....CAS No. 7440-50-8
Percent by Weight - At least 99%

SECTION 16. OTHER INFORMATION

Date of Original Issue: January 12, 2007 **Version:** 01 *(First edition)*

Date of Latest Revision: June 19, 2015 **Version:** 05

The information in this Safety Data Sheet is based on the following references:

- American Conference of Governmental Industrial Hygienists, 2004, Documentation of the Threshold Limit Values and Biological Exposure Indices, 7th Edition plus updates.
- American Conference of Governmental Industrial Hygienists, 2015, Guide to Occupational Exposure Values.
- BIA Report 13/97 – Combustion and Explosion Characteristics of Dusts – Table 2 Product Group: Metals and Alloys.
- Bretherick's Handbook of Reactive Chemical Hazards, 20th Anniversary Edition. (P. G. Urben, Ed.) 1995.
- Canadian Centre for Occupational Health and Safety CHEMINFO Record No: 2073, Copper - Last Revised 2005-03.
- Commission de la santé et la sécurité du travail, Service du répertoire toxicologique, Cuivre , 2010-07.
- Explosion Temperatures of Metals and Other Elemental Dust Clouds, Kenneth L. Cashdollar & Isaac A Zlochower, J. of Loss Control In the Process Industries, 20, (2007) 337 – 348.
- Health Canada, Hazardous Products Regulations SOR/2015-17, 30 January 2015.
- Industrial Toxicology 3rd Edition: Alice Hamilton & Harriet L Hardy, Publishing Sciences Group, Inc. (1974).
- International Chemical Safety Cards (WHO/IPCS/ILO) ICSC:0240 – Copper (Revised Sept 1993).
- International Labour Office (WHO/ILO) Encyclopedia of Occupational Health & Safety 4th Ed. CD-ROM Version (1998).
- Merck & Co., Inc., 2001, The Merck Index, An Encyclopedia of Chemicals, Drugs, and Biologicals, Thirteenth Edition.
- National Library of Medicine, Hazardous Substance Data Bank (last accessed 2010 -02-03).
- National Oceanic and Atmospheric Administration, Office of Response and Restoration, CAMEO Chemicals – Database of Hazardous Materials [http://www.cameochemicals.noaa.gov/] last accessed 2010-02-03.
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- The Chemistry of Industrial Toxicology: Hervey B Elkins, John Wiley & Sons, New York (1959).
- Toxicology of the Eye, 2nd Ed. W. Morton Grant, MD, Charles C. Thomas , Publishers; Springfield. IL (1974).
- University of Pittsburgh Safety Manual, EHS Policy # 02-005 – Combustible Metals – 01 Jan 2007.
- U.S. Dept of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Toxicological Profile for Copper (Sept 2004).
- U.S. Dept of Health and Human Services, National Institute for Occupational Safety and Health, NIOSH Pocket Guide to Chemical Hazards. CD-ROM Edition September 2005.
- U.S. Dept of Health and Human Services, National Institute for Occupational Safety and Health, Registry of Toxic Effects of Chemical Substances (RTECS) CCOHS Web Access subscription.
- U.S. Occupational Safety and Health Administration, 1989, Code of Federal Regulations, Title 29, Part 1910.

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SAFETY DATA SHEET

Version 6.8
Revision Date 05/25/2023
Print Date 08/12/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Ethylbenzene

Product Number : 296848
Brand : Sigma-Aldrich
Index-No. : 601-023-00-4
CAS-No. : 100-41-4

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225
Acute toxicity, Inhalation (Category 4), H332
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure (Category 2), hearing organs, H373
Aspiration hazard (Category 1), H304
Short-term (acute) aquatic hazard (Category 2), H401
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

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Pictogram

Signal Word Danger

Hazard statement(s)

H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H332	Harmful if inhaled.
H351	Suspected of causing cancer.
H373	May cause damage to organs (hearing organs) through prolonged or repeated exposure.
H401	Toxic to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe mist or vapors.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P331	Do NOT induce vomiting.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula : C_8H_{10}
Molecular weight : 106.17 g/mol

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CAS-No. : 100-41-4
EC-No. : 202-849-4
Index-No. : 601-023-00-4

Component	Classification	Concentration
ethylbenzene		
	Flam. Liq. 2; Acute Tox. 4; Carc. 2; STOT RE 2; Asp. Tox. 1; Aquatic Acute 2; Aquatic Chronic 3; H225, H332, H351, H373, H304, H401, H412	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Carbon dioxide (CO2) Foam Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

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5.2 Special hazards arising from the substance or mixture

Carbon oxides
Combustible.
Pay attention to flashback.
Vapors are heavier than air and may spread along floors.
Development of hazardous combustion gases or vapours possible in the event of fire.
Forms explosive mixtures with air at ambient temperatures.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures
Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

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Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

hygroscopic

Storage class
Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
ethylbenzene	100-41-4	TWA	100 ppm 435 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	125 ppm 545 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100 ppm 435 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		STEL	30 ppm 130 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		PEL	5 ppm 22 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
ethylbenzene	100-41-4	Sum of mandelic acid and phenyl glyoxylic acid	0.15g/g creatinine	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			

8.2 Exposure controls

Appropriate engineering controls
Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

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Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Viton®
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 10 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Body Protection
Flame retardant antistatic protective clothing.

Respiratory protection
required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Color: colorless
b)	Odor	aromatic
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point: -94.9 °C (-138.8 °F) at 101.3 hPa - (ECHA)
f)	Initial boiling point	136.1 °C 277.0 °F at 1,013.3 hPa

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	and boiling range	
g)	Flash point	22.0 °C (71.6 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 6.7 %(V) Lower explosion limit: 1 %(V)
k)	Vapor pressure	9.52 hPa at 20 °C (68 °F) - OECD Test Guideline 104
l)	Vapor density	No data available
m)	Density	0.87 g/cm3 at 20 °C (68 °F)
	Relative density	0.86 - 0.8720 °C
n)	Water solubility	0.2 g/l at 25 °C (77 °F) - Regulation (EC) No. 440/2008, Annex, A.6 - slightly soluble
o)	Partition coefficient: n-octanol/water	log Pow: 3.6 at 20 °C (68 °F) - Regulation (EC) No. 440/2008, Annex, A.8 - Bioaccumulation is not expected.
p)	Autoignition temperature	430 °C (806 °F) at 1,013 hPa
q)	Decomposition temperature	No data available
r)	Viscosity	0.773 mm2/s at 20 °C (68 °F) - OECD Test Guideline 114 - 0.641 mm2/s at 40 °C (104 °F) - OECD Test Guideline 114 -
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information

Surface tension	71.2 mN/m at 0.058g/l at 23 °C (73 °F) - Surface tension

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapors may form explosive mixture with air.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Violent reactions possible with:
Strong oxidizing agents
rubber
various plastics

10.4 Conditions to avoid

Warming.

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10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - 3,500 mg/kg
Remarks: (ECHA)
LC50 Inhalation - Rat - male - 4 h - 17.8 mg/l - vapor

Remarks: (ECHA)
LD50 Dermal - Rabbit - 15,433 mg/kg
Remarks: (RTECS)

Skin corrosion/irritation
Skin - Rabbit
Result: Moderate skin irritation - 24 h
Remarks: (ECHA)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Mild eye irritation
Remarks: (ECHA)

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: Micronucleus test
Species: Mouse
Cell type: Bone marrow
Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

Test Type: unscheduled DNA synthesis assay
Species: Mouse

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Application Route: Inhalation
Method: OECD Test Guideline 486
Result: negative

Carcinogenicity

IARC: 2B - Group 2B: Possibly carcinogenic to humans (ethylbenzene)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
May cause damage to organs through prolonged or repeated exposure.
- hearing organs
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard
Aspiration may cause pulmonary edema and pneumonitis.

11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 28 d - NOAEL (No observed adverse effect level) - 75 mg/kg

RTECS: DA0700000
Central nervous system depression, Nausea, Headache, Vomiting, Ataxia., Tremors
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Systemic effects:

CNS disorders
Tiredness
Drowsiness
Dizziness
Convulsions
Headache
narcosis

Handle in accordance with good industrial hygiene and safety practice.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

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SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	semi-static test LC50 - Oncorhynchus mykiss (rainbow trout) - 4.2 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 1.8 - 2.4 mg/l - 48 h (US-EPA)
Toxicity to algae	static test EC50 - Pseudokirchneriella subcapitata (green algae) - 3.6 mg/l - 96 h (US-EPA)
Toxicity to bacteria	EC50 - Photobacterium phosphoreum - 9.68 mg/l - 30 min Remarks: (IUCLID)

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 28 d Result: ca.79 % - Readily biodegradable. (ISO 14593)

12.3 Bioaccumulative potential

Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

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SECTION 14: Transport information

DOT (US)
UN number: 1175 Class: 3 Packing group: II
Proper shipping name: Ethylbenzene
Reportable Quantity (RQ): 1000 lbs
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 1175 Class: 3 Packing group: II EMS-No: F-E, S-D
Proper shipping name: ETHYLBENZENE

IATA
UN number: 1175 Class: 3 Packing group: II
Proper shipping name: Ethylbenzene

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
ethylbenzene	100-41-4	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Chronic Health Hazard

Reportable Quantity : F003 lbs

Massachusetts Right To Know Components

	CAS-No.	Revision Date
ethylbenzene	100-41-4	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
ethylbenzene	100-41-4	2007-07-01

California Prop. 65 Components

	CAS-No.	Revision Date
, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.ethylbenzene	100-41-4	2007-09-28

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SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.8 Revision Date: 05/25/2023 Print Date: 08/12/2023

The life science business of Merck KGaA, Darmstadt, Germany
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Safety Data Sheet

Revision Date: 06/04/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31279 / Indeno(1,2,3-c,d)pyrene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	11
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:

GHS Classification:	Carcinogenicity Category 2
GHS Signal Word:	Warning
GHS Hazard:	Suspected of causing cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF exposed or concerned: Get medical advice/attention.
Storage:	Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs:	No data available
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
indeno (1,2,3-c,d) pyrene	193-39-5	205-893-2	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention

Skin Contact: Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.

Fire and/or Explosion Hazards: No data.

Fire Fighting Methods and Protection: Use methods for the surrounding fire.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions: Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.

Storage Technical Measures and Conditions: Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
indeno (1,2,3-c,d) pyrene	193-39-5	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.

Respiratory Protection: Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

	eliminate symptoms.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	530 °C
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.Contamination High temperatures
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Indeno[1,2,3-cd]pyrene	193-39-5	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to acheive the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; {OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	193-39-5	Group 2B

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Incinerate spent or discarded material a permitted hazardous waste facility.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial

Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

International:
IATA Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Indeno[1,2,3-cd]pyrene	193-39-5	Prop 65 Cancer
Dichloromethane Dichloromethane (Methylene chloride)	75-09-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 03/22/18
Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References: No data available
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LEAD METAL
SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product Identity: Lead Metal

Trade Names and Synonyms: Lead; Pb; Plumbum; Metallic Lead; Inorganic Lead; ASTM B29; TADANAC Lead, Low-Alpha Lead.

Manufacturer:
Teck Metals Ltd.
Trail Operations
Trail, British Columbia
V1R 4L8
Emergency Telephone: 250-364-4214

Supplier:
In U.S.:
Teck American Metal Sales Incorporated
501 North Riverpoint Blvd, Suite 300
Spokane, WA
USA, 99202

Other than U.S.:
Teck Metals Ltd.
#1700 – 11 King Street West
Toronto, Ontario
M5H 4C7

Preparer:
Teck Metals Ltd.
Suite 3300 – 550 Burrard Street
Vancouver, British Columbia
V6C 0B3

Date of Last Review: June 29, 2015.

Date of Last Edit: June 29, 2015.

Product Use: Used as a construction material for tank linings, piping, and equipment used in the manufacture of sulphuric acid and the refining and processing of petroleum; used in x-ray and atomic radiation shielding; used in the manufacture of paint pigments, organic and inorganic lead compounds, lead shot, lead wire for bullets, ballast, and lead solders; used as a bearing metal or alloy; used in the manufacture of storage batteries, ceramics, plastics, and electronic devices; used in the metallurgy of steel and other metals; and used in the form of lead oxide for batteries.

SECTION 2. HAZARDS IDENTIFICATION

CLASSIFICATION:

Health		Physical	Environmental
Acute Toxicity (Oral, Inhalation)	– Does not meet criteria	Does not meet criteria for any Physical Hazard	**Aquatic Toxicity – Short Term (Acute) Category 3**
Skin Corrosion/Irritation	– Does not meet criteria		
Eye Damage/Eye Irritation	– Does not meet criteria		
Respiratory or Skin Sensitization	– Does not meet criteria		
Mutagenicity	– Does not meet criteria		
Carcinogenicity	**– Category 2**		
Reproductive Toxicity	**– Category 1A**		
Specific Target Organ Toxicity Chronic Exposure	**– Category 1**		

LABEL:

Symbols:

Signal Word:

DANGER

Hazard Statements	**Precautionary Statements:**
DANGER! Causes damage to kidneys, blood-forming systems, central nervous system and digestive tract through prolonged or repeated exposure. May damage the unborn child. May cause harm to breast-fed children. Suspected of damaging fertility. Suspected of causing cancer. Harmful to aquatic life.	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection. Do not breathe dust or fumes. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. If exposed or concerned or you feel unwell: Get medical advice/attention. Avoid release to the environment.

Emergency Overview: A bluish-white to silvery-grey, heavy, soft metal that does not burn in bulk. Finely-divided lead dust clouds are a moderate fire and explosion hazard, however. When heated strongly in air, highly toxic lead oxide fumes can be generated. Inhalation or ingestion of lead may produce both acute and chronic health effects. Possible cancer and reproductive hazard. SCBA and full protective clothing are required for fire emergency response personnel.

Potential Health Effects: Inhalation or ingestion of lead may result in headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia and leg, arm, and joint pain. Prolonged exposure may also cause central nervous system damage, hypertension, gastrointestinal disturbances, anemia, kidney dysfunction and possible reproductive effects. Pregnant women should be protected from excessive exposure in order to prevent lead crossing the placental barrier and causing infant neurological disorders. Lead and inorganic lead compounds are listed as an *A3 Carcinogen (Confirmed Animal Carcinogen with Unknown Relevance to Humans)* by the ACGIH. IARC has listed lead compounds as *Group 2A Carcinogens (Probably Carcinogenic to Humans)* while lead metal is listed as *Group 2B (Possibly Carcinogenic to Humans)*. The NTP lists lead and lead compounds as *Reasonably Anticipated to be a Human Carcinogen*. OSHA and the EU does not currently list lead as a human carcinogen (see Toxicological Information, Section 11).

Potential Environmental Effects: Lead metal has relatively low bioavailability; however, compounds which it forms with other elements can be toxic to both aquatic and terrestrial organisms at low concentrations. These compounds can be particularly toxic in the aquatic environment. Lead bioaccumulates in plants and animals in both aquatic and terrestrial environments (see Ecological Information, Section 12).

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENT	CAS Registry No.	CONCENTRATION (% wgt/wgt)
Lead	7439-92-1	99+%

Note: See Section 8 for Occupational Exposure Guidelines.

SECTION 4. FIRST AID MEASURES

Eye Contact: *Symptoms:* Eye irritation, redness. Gently brush product off face if necessary. Do not rub eye(s). Let the eye(s) water naturally for a few minutes. Look right and left, then up and down. If particle/dust does not dislodge, cautiously rinse eye(s) with lukewarm, gently flowing water for 5 minutes or until particle/dust is removed, while holding eyelid(s) open. If irritation persists, get medical advice/attention. DO NOT attempt to manually remove anything stuck to the eye.

Skin Contact: *Symptoms:* Skin soiling, mild irritation. Gently brush away excess dust. Wash gently and thoroughly with lukewarm, gently flowing water and non-abrasive soap for 5 minutes, or until product is removed. If skin irritation occurs or you feel unwell, get medical advice/attention. *Molten Metal:* Flush contact area to solidify and cool but do not attempt to remove encrusted material or clothing. Cover burns and seek medical attention immediately.

Inhalation: *Symptoms:* Respiratory irritation. Remove source of exposure or move person to fresh air and keep comfortable for breathing. Seek medical attention if you feel unwell.

Ingestion: *Symptoms:* Stomach upset. If you feel unwell or are concerned, get medical advice/attention.

SECTION 5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Massive metal is not flammable or combustible. Finely-divided lead dust or powder is a moderate fire hazard and moderate explosion hazard when dispersed in the air at high concentrations and exposed to heat, flame, or other ignition sources. Explosions may also occur upon contact with certain incompatible materials (see Stability and Reactivity, Section 10).

Extinguishing Media: Use any means of extinction appropriate for surrounding fire conditions such as water spray, carbon dioxide, dry chemical, or foam.

Fire Fighting: Do not use direct water streams on fires where molten metal is present, due to the risk of a steam explosion that could potentially eject molten metal uncontrollably. Use a fine water mist on the front-running edge of the spill and on the top of the molten metal to cool and solidify it. If possible, move solid material from fire area or cool material exposed to flame to prevent melting of the metal ingots. Highly toxic lead oxide fumes may evolve in fires. Fire fighters must be fully trained and wear full protective clothing including an approved, self-contained breathing apparatus which supplies a positive air pressure within a full face-piece mask.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Procedures for Cleanup: Control source of spillage if possible to do so safely. Restrict access to the area until completion of clean-up. Clean up spilled material immediately, observing precautions outlined below. Molten metal should be allowed to solidify before cleanup. If solid metal, wear gloves, pick up and return to process. If dust, wear recommended personal protective equipment (see below) and use methods which will minimize dust generation (e.g., vacuum solids). Return uncontaminated spilled material to the process if possible. Place contaminated material in suitable labelled containers for later recovery or disposal. Treat or dispose of waste material in accordance with all local, regional, and national requirements.

Personal Precautions: Persons responding to an accidental release should wear protective clothing, gloves and a respirator (see also Section 8). Close-fitting safety goggles may be necessary in some circumstances to prevent eye contact with dust and fume. Where molten metal is involved, wear heat-resistant gloves and suitable clothing for protection from hot-metal splash as well as a respirator to protect against inhalation of lead fume. Workers should wash and change clothing following cleanup of a lead spill to prevent personal contamination with lead dust.

Environmental Precautions: Lead metal has low bioavailability; however, compounds which it forms with other elements can be toxic to aquatic and terrestrial organisms. Releases of the product to water and soil should be prevented.

SECTION 7. HANDLING AND STORAGE

Store in a DRY, covered area, separate from strong acids, other incompatible materials, active metals and food or feedstuffs. Solid metal suspected of containing moisture should be THOROUGHLY DRIED before being added to a molten bath. Otherwise, entrained moisture could expand explosively and spatter molten metal out of the bath. No special packaging materials are required. Lead metal, in contact with wood or other surfaces, may leave traces of lead particulate that can accumulate over time. Cleaning or disposal of these surfaces requires review to ensure that any effluent or solid waste disposal meets the requirements of regulations in the applicable jurisdiction.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Guidelines:

Component	ACGIH TLV	OSHA PEL	NIOSH REL
Lead	0.05 mg/m^3	0.05 mg/m^3	0.05 mg/m^3

NOTE: OEGs for individual jurisdictions may differ from those given above. Check with local authorities for the applicable OEGs in your jurisdiction.
ACGIH - American Conference of Governmental Industrial Hygienists; OSHA - Occupational Safety and Health Administration; NIOSH - National Institute for Occupational Safety and Health. TLV – Threshold Limit Value, PEL – Permissible Exposure Limit, REL – Recommended Exposure Limit.

NOTE: The selection of the necessary level of engineering controls and personal protective equipment will vary depending upon the conditions of use and the potential for exposure. The following are therefore only general guidelines that may not fit all circumstances. Control measures to consider include:

Ventilation: Use adequate local or general ventilation to maintain the concentration of lead fumes in the working environment well below recommended occupational exposure limits. Supply sufficient replacement air to make up for air removed by the exhaust system. Local exhaust is recommended for melting, casting, welding, grinding, flame cutting or burning, and use of lead powders.

Protective Clothing: Gloves and coveralls or other work clothing are recommended to prevent prolonged or repeated direct skin contact when lead is processed. Appropriate eye protection should be worn where fume or dust is generated. Where hot or molten metal is handled, heat resistant gloves, goggles or face shield, and clothing to protect from radiant heat and hot metal splash should be worn. Safety type boots are recommended.

Respirators: Where lead dust or fumes are generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH-approved respiratory protection equipment (a 42CFR84 Class N, R or P-100 particulate filter cartridge). When exposure levels are obviously high but the actual concentration is unknown, a self-contained breathing apparatus which supplies a positive air pressure within a full face-piece mask should be worn.

General Hygiene Considerations: Do not eat, drink or smoke in work areas. Thoroughly wash hands before eating, drinking, or smoking in appropriate, designated areas as well as at the end of the workday. A double locker-shower system with separate clean and dirty sides is usually required for lead handling operations to avoid cross-contamination of street clothes. Contaminated clothing should be changed frequently and laundered before each reuse. Inform laundry personnel of contaminants' hazards. Workers should not take dirty work clothes home and launder them with other personal clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Malleable, bluish-white to silvery-grey solid metal	**Odour:** None	**Odour Threshold:** Not Applicable	**pH:** Not Applicable
Vapour Pressure: (negligible @ 20°C)	**Vapour Density:** Not Applicable	**Melting Point/Range:** 328°C	**Boiling Point/Range:** 1,740°C
Relative Density (Water = 1)**:** 11.34	**Evaporation Rate:** Not Applicable	**Coefficient of Water/Oil Distribution:** Not Applicable	**Solubility:** Insoluble in water
Flash Point: None	**Flammable Limits (LEL/UEL):** Not Flammable	**Auto-ignition Temperature:** None	**Decomposition Temperature:** None

SECTION 10. STABILITY AND REACTIVITY

Stability & Reactivity: Massive metal is stable and not considered reactive under normal temperatures and pressures. Hazardous polymerization or runaway reactions will not occur. Freshly cut or cast lead surfaces tarnish rapidly due to the formation of an insoluble protective layer of basic lead carbonate.

Incompatibilities: Lead reacts vigorously with strong acids (e.g., hot concentrated nitric acid, boiling concentrated hydrochloric acid, etc.), strong oxidizers such as peroxides, chlorates, nitrates and halogen or interhalogen compounds such as chlorine trifluoride. Powdered lead metal in contact with disodium acetylide, chlorine trifluoride, sodium carbide or fused ammonium nitrate poses a risk of explosion. Solutions of sodium azide in contact with lead metal can form lead azide, which is a detonating compound. Vigorous reactions can also occur between molten lead and active metals, such as sodium, potassium, lithium and calcium. A lead-zirconium alloy (10-70% Zr) will ignite when struck with a hammer.

Hazardous Decomposition Products: High temperature operations such as oxy-acetylene cutting or burning, electric arc welding or overheating a molten bath will generate highly toxic lead oxide fume. Lead oxide is highly soluble in body fluids and the particle size of the metal fumes is largely within the respirable size range, which increases the likelihood of inhalation and deposition of the fume within the body.

SECTION 11. TOXICOLOGICAL INFORMATION

General: Lead accumulates in bone and body organs once it enters the body. Elimination from the body is slow. Initial and periodic medical examinations are advised for persons repeatedly exposed to levels at or above the exposure limits of lead dust or fumes. Once lead enters the body, it can affect a variety of organ systems, including the nervous system, kidneys, reproductive system, blood formation, and gastrointestinal system. The primary routes of exposure to lead are inhalation or ingestion of dust and fumes.

Acute:
Skin/Eye: Contact with dust or fume may cause local irritation but would not cause tissue damage.

Inhalation: Exposure to lead dust or fume may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia, and pain in legs, arms, and joints. An intense, short-term exposure to lead could cause acute encephalopathy with seizures, coma, and death. However, short-term exposures of this magnitude are unlikely in industry today. Kidney damage, as well as anemia, can occur from acute exposure.

Ingestion: Symptoms due to ingestion of lead dust or fume would be similar to those from inhalation. Other health effects such as metallic taste in the mouth and constipation or bloody diarrhea might also occur.

Chronic:
Prolonged exposure to lead dust and fume may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia, and, rarely, wrist drop. Reduced hemoglobin production has been associated with low lead exposures. Symptoms of central nervous system damage due to moderate lead exposure include fatigue, headaches, tremors and hypertension. Very high lead exposure can result in lead encephalopathy with symptoms of hallucinations, convulsions, and delirium. Kidney dysfunction and possible injury has also been associated with chronic lead poisoning. Chronic over-exposure to lead has been implicated as a causative agent for the impairment of male and female reproductive capacity. Pregnant women should be protected from excessive exposure as lead can cross the placental barrier and unborn children may suffer neurological damage or developmental problems due to excessive lead exposure. Teratogenic and mutagenic effects from exposure to lead have been reported in some studies but not in others. The literature is inconsistent and no firm conclusions can be drawn at this time. Lead and lead compounds are listed as an *A3 Carcinogen (Confirmed Animal Carcinogen with Unknown Relevance to Humans)* by the ACGIH. IARC has listed lead compounds as *Group 2A Carcinogens (Probably Carcinogenic to Humans)* while lead metal is listed as *Group 2B (Possibly Carcinogenic to Humans)*. The NTP lists lead and lead compounds as *Reasonably Anticipated to be a Human Carcinogen*. OSHA and the EU do not currently list lead as a human carcinogen.

Animal Toxicity:

Hazardous Ingredient:	Acute Oral Toxicity:	Acute Dermal Toxicity:	Acute Inhalation Toxicity:
Lead	No Data	No Data	No Data

SECTION 12. ECOLOGICAL INFORMATION

While lead metal is relatively insoluble, its processing or extended exposure in aquatic and terrestrial environments may lead to the release of lead compounds in more bioavailable forms. While lead compounds are not particularly mobile in the aquatic environment, they can be toxic to aquatic organisms, especially fish, at low concentrations. Water hardness, pH and dissolved organic carbon content are three major factors which regulate the degree of lead toxicity. Lead in soil is generally neither very mobile nor bioavailable, as it can become strongly sorbed onto soil particles, increasingly so over time, to a degree related to physical properties of the soil. Lead bioaccumulates in plants and animals in both aquatic and terrestrial environments.

SECTION 13. DISPOSAL CONSIDERATIONS

If material cannot be returned to process or salvage, dispose of in accordance with applicable regulations.

SECTION 14. TRANSPORT INFORMATION

PROPER SHIPPING NAME ..... Not a regulated product in ingot form.
TRANSPORT CANADA AND U.S. DOT CLASSIFICATION ..... Not Applicable

TRANSPORT CANADA AND U.S. DOT PIN ..... Not Applicable
MARINE POLLUTANT..... No
IMO CLASSIFICATION ..... Not Regulated

SECTION 15. REGULATORY INFORMATION

U.S.
Ingredient Listed on TSCA Inventory..... Yes

Hazardous Under Hazard Communication Standard ..... Yes

CERCLA Section 103 Hazardous Substances..... ..... Lead ..... RQ: 10 lbs. (4.54 kg.)*
*reporting not required when diameter of the pieces of solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

EPCRA Section 302 Extremely Hazardous Substance..... No

EPCRA Section 311/312 Hazard Categories ..... Delayed (chronic) health hazard - Carcinogen
Delayed (chronic) health hazard – Reproductive toxin

EPCRA Section 313 Toxic Release Inventory..... Lead CAS No. 7439-92-1
Percent by Weight - At least 99%

SECTION 16. OTHER INFORMATION

Date of Original Issue: July 23, 1997 **Version:** 01 *(First edition)*

Date of Latest Revision: June 29, 2015 **Version:** 13

The information in this Safety Data Sheet is based on the following references:

- American Conference of Governmental Industrial Hygienists, 2004, Documentation of the Threshold Limit Values and Biological Exposure Indices, Seventh Edition plus updates.
- American Conference of Governmental Industrial Hygienists, 2015, Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.
- American Conference of Governmental Industrial Hygienists, Guide to Occupational Exposure Values – 2015.
- Bretherick's Handbook of Reactive Chemical Hazards, 20th Anniversary Edition. (P. G. Urben, Ed), 1995.
- Canadian Centre for Occupational Health and Safety, Hamilton, ON, CHEMINFO Record No. 608 - Lead (Rev. 2009-05).
- European Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (REACH).
- Health Canada, SOR/2015-17, Hazardous Products Regulations, 30 January 2015.
- International Agency for Research on Cancer (IARC), Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, 1972 – present, (multi-volume work), World Health Organization, Geneva.
- International Chemical Safety Cards (WHO/IPCS/ILO), ICSC:0052 - Lead.
- Merck & Co., Inc., 2001, The Merck Index, An Encyclopedia of Chemicals, Drugs, and Biologicals, Thirteenth Edition.
- National Library of Medicine, National Toxicology Information Program, Hazardous Substance Data Bank (online version).
- Patty's Toxicology, Fifth Edition, 2001: E. Bingham, B. Cohrssen & C.H. Powell, Ed.
- U.S. Dept. of Health and Human Services, National Institute of Environmental Health Sciences, National Toxicology Program (NTP), 13th Report on Carcinogens, October 2014.
- U.S. Dept. of Health and Human Services, National Institute for Occupational Safety and Health, NIOSH Pocket Guide to Chemical Hazards, on-line edition.
- U.S. Dept. of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Toxicological Profile for Lead, September 2005.
- U.S. Occupational Safety and Health Administration, 1989, Code of Federal Regulations, Title 29, Part 1910.

Notice to Reader
Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. Teck American Metal Sales Incorporated and Teck Metals Ltd. extend no warranty and assume no responsibility for the accuracy of the content and expressly disclaim all liability for reliance thereon. This safety data sheet provides guidelines for the safe handling and processing of this product; it does not and cannot advise on all possible situations. Therefore, your specific use of this product should be evaluated to determine if additional precautions are required. Individuals exposed to this product should read and understand this information and be provided pertinent training prior to working with this product.

SAFETY DATA SHEET

Creation Date 20-Aug-2014 **Revision Date** 24-Dec-2021 **Revision Number** 4

1. Identification

Product Name **Mercury (Certified ACS)**

Cat No. : **M141-1LB; M141-6LB**

Synonyms Colloidal mercury; Hydrargyrum; Metallic mercury

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute Inhalation Toxicity - Vapors	Category 2
Reproductive Toxicity	Category 1B
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Central nervous system (CNS), Kidney.	

Label Elements

Signal Word
Danger

Hazard Statements
Fatal if inhaled
May damage the unborn child
Causes damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Mercury	7439-97-6	100

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects None reasonably foreseeable.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. approved class D extinguishers.

Unsuitable Extinguishing Media Water may be ineffective

Flash Point Not applicable
Method - No information available

Autoignition Temperature No information available
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Very toxic. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Keep product and empty container away from heat and sources of ignition. Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Mercury oxide. Toxic fumes.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. No special precautions required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Should not be released into the environment. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Pick up and transfer to properly labelled containers.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Keep in a dry place. Keep away from acids. Incompatible Materials. Strong oxidizing agents. Ammonia. Metals. Halogens.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Mercury	TWA: 0.025 mg/m³ Skin	(Vacated) TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³ (Vacated) STEL: 0.03 mg/m³ Skin (Vacated) Ceiling: 0.1 mg/m³	IDLH: 10 mg/m³ TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³	TWA: 0.025 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. None under normal use conditions.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection No special protective equipment required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Silver
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-38.87 °C / -38 °F
Boiling Point/Range	356.72 °C / 674.1 °F
Flash Point	Not applicable
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	0.002 mmHg @ 25 °C
Vapor Density	7.0
Specific Gravity	13.59 (H2O=1)
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	Hg
Molecular Weight	200.59

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Strong oxidizing agents, Ammonia, Metals, Halogens

Hazardous Decomposition Products Mercury oxide, Toxic fumes

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Mercury	Not listed	Not listed	LC50 < 27 mg/m³ (Rat) 2 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Mercury	7439-97-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects May cause harm to the unborn child.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure Central nervous system (CNS) Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Mercury	Not listed	0.9 mg/L LC50 96h	Not listed	Not listed

		0.18 mg/L LC50 96h 0.16 mg/L LC50 96h 0.5 mg/L LC50 96h		

Persistence and Degradability Insoluble in water May persist

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Mercury - 7439-97-6	U151	-

14. Transport information

DOT

UN-No	UN2809
Proper Shipping Name	Mercury
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

TDG

UN-No	UN2809
Proper Shipping Name	Mercury
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IATA

UN-No	UN2809
Proper Shipping Name	Mercury
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN2809
Proper Shipping Name	Mercury
Hazard Class	8
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Mercury	7439-97-6	X	ACTIVE	S;12C

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule.

TSCA 12(b) - Notices of Export

Component	CAS No	**TSCA 12(b)** - Notices of Export
Mercury	7439-97-6	Section 5

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Mercury	7439-97-6	X	-	231-106-7	X	X		X	X	KE-23117

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Mercury	7439-97-6	100	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Mercury	-	-	X	X

Clean Air Act

OSHA - Occupational Safety and Health Administration: Not applicable

CERCLA: This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Mercury	1 lb	-

California Proposition 65: This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Mercury	7439-97-6	Developmental	-	Developmental

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Mercury	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security: This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade: No information available

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV -	REACH (1907/2006) - Annex XVII -	REACH Regulation (EC

	Substances Subject to Authorization	Restrictions on Certain Dangerous Substances	1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Mercury	-	Use restricted. See item 18[a]. (see link for restriction details) Use restricted. See item 30. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-

https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Mercury	7439-97-6	Listed	Not applicable	Not applicable	0.1% (Max. Conc.)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Mercury	7439-97-6	Not applicable	Not applicable	X	Annex I - Y29

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 20-Aug-2014
Revision Date 24-Dec-2021
Print Date 24-Dec-2021
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Version 8.5
Revision Date 07/23/2022
Print Date 10/08/2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Xylenes

Product Number : 534056
Brand : SIGALD
Index-No. : 601-022-00-9
CAS-No. : 1330-20-7

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 3), H226
Acute toxicity, Inhalation (Category 4), H332
Acute toxicity, Dermal (Category 4), H312
Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Carcinogenicity (Category 2), H351
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Specific target organ toxicity - repeated exposure (Category 2), hearing organs, H373
Specific target organ toxicity - repeated exposure, Inhalation (Category 2), Central nervous system, Liver, Kidney, H373
Aspiration hazard (Category 1), H304
Short-term (acute) aquatic hazard (Category 2), H401

The life science business of Merck KGaA, Darmstadt, Germany
operates as MilliporeSigma in the US and Canada

Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word: Danger

Hazard statement(s)

H226	Flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H312 + H332	Harmful in contact with skin or if inhaled.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs (hearing organs) through prolonged or repeated exposure.
H373	May cause damage to organs (Central nervous system, Liver, Kidney) through prolonged or repeated exposure if inhaled.
H401	Toxic to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P331	Do NOT induce vomiting.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant

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	foam to extinguish.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : Xylene mixture of isomers

Formula : C_8H_{10}
Molecular weight : 106.17 g/mol
CAS-No. : 1330-20-7
EC-No. : 215-535-7
Index-No. : 601-022-00-9

Component	Classification	Concentration
Xylene		
	Flam. Liq. 3; Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3; STOT RE 2; Asp. Tox. 1; Aquatic Acute 2; Aquatic Chronic 3; H226, H332, H312, H315, H319, H335, H373, H304, H401, H412	>= 70 - < 90 %

ethylbenzene		
	Flam. Liq. 2; Acute Tox. 4; Carc. 2; STOT RE 2; Asp. Tox. 1; Aquatic Acute 2; Aquatic Chronic 3; H225, H332, H351, H373, H304, H401, H412	>= 20 - < 30 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

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In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air at elevated temperatures.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains. Risk of explosion.

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6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Storage class

Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

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Component	CAS-No.	Value	Control parameters	Basis
Xylene	1330-20-7	PEL	100 ppm 435 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		C	300 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		STEL	150 ppm 655 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		TWA	100 ppm 435 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	100 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Not classifiable as a human carcinogen		
		STEL	150 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Not classifiable as a human carcinogen		
ethylbenzene	100-41-4	TWA	100 ppm 435 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	125 ppm 545 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100 ppm 435 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		STEL	30 ppm 130 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		PEL	5 ppm 22 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Xylene	1330-20-7	Methylhippuric acids	1.5g/g creatinine	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			
ethylbenzene	100-41-4	Sum of mandelic acid and phenyl glyoxylic acid	0.15g/g creatinine	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			

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8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 30 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Flame retardant antistatic protective clothing.

Respiratory protection
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: clear, liquid Color: colorless

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b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	< 0 °C (< 32 °F)
f)	Initial boiling point and boiling range	136 - 140 °C 277 - 284 °F at 1,013 hPa
g)	Flash point	25 °C (77 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 7 %(V) Lower explosion limit: 1.1 %(V)
k)	Vapor pressure	24 hPa at 37.70 °C (99.86 °F)
l)	Vapor density	3.67 - (Air = 1.0)
m)	Density	0.865 g/cm3 at 20 °C (68 °F)
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Relative vapor density	3.67 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapor/air-mixtures are explosive at intense warming.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

No data available

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10.4 Conditions to avoid
Heating.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Acute toxicity estimate Oral - 3,518 mg/kg
(Calculation method)
LD50 Oral - Rat - male - 3,523 mg/kg (Xylene)
(EC Directive 92/69/EEC B.1 Acute Toxicity (Oral))
Remarks: (ECHA)
Acute toxicity estimate Inhalation - 4 h - 12 mg/l - vapor(Calculation method)

LC50 Inhalation - Rat - male - 4 h - 29.09 mg/l - vapor
(Xylene)
(Regulation (EC) No. 440/2008, Annex, B.2)
Remarks: (Regulation (EC) No 1272/2008, Annex VI)
Acute toxicity estimate Dermal - 1,376 mg/kg
(Calculation method)
LD50 Dermal - Rabbit - > 1,700 mg/kg (Xylene)
Remarks: (RTECS)
No data available
No data available

Skin corrosion/irritation
Skin - Rabbit (Xylene)
Result: Moderate skin irritation - 24 h
Remarks: (IUCLID)
Drying-out effect resulting in rough and chapped skin. After long-term exposure to the chemical: Dermatitis (Xylene)

Serious eye damage/eye irritation
Eyes - Rabbit (Xylene)
Result: Causes serious eye irritation. - 24 h
Remarks: (RTECS)

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse (Xylene)
Result: negative
(OECD Test Guideline 429)

Germ cell mutagenicity
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
(Xylene)
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: Regulation (EC) No. 440/2008, Annex, B.10
Result: negative
Remarks: (National Toxicology Program)

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Test Type: Ames test
(Xylene)
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: sister chromatid exchange assay
(Xylene)
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: Regulation (EC) No. 440/2008, Annex, B.19
Result: negative
(Xylene)
Test Type: dominant lethal test
Species: Mouse

Method: OECD Test Guideline 478
Result: negative

Carcinogenicity

IARC: 2B - Group 2B: Possibly carcinogenic to humans (ethylbenzene)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
May be fatal if swallowed and enters airways.

11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 90 d - NOAEL (No observed adverse effect level) - 150 mg/kg - LOAEL (Lowest observed adverse effect level) - 150 mg/kg
(Xylene)
Blurred vision, Incoordination., Headache, Nausea, Vomiting, Dizziness, Weakness, anemia, Prolonged or repeated exposure to skin causes defatting and dermatitis. (Xylene)
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Xylene)

After absorption:
(Xylene)
Systemic effects:
(Xylene)
Headache
somnolence
Dizziness
agitation, spasms

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narcosis
inebriation
(Xylene)
Effect potentiated by: ethanol
(Xylene)
Other dangerous properties can not be excluded.
(Xylene)
Handle in accordance with good industrial hygiene and safety practice.
(Xylene)

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence
(Xylene)

SECTION 12: Ecological information

12.1 Toxicity

No data available

Toxicity to fish	static test LC50 - Oncorhynchus mykiss (rainbow trout) - 2.60 mg/l - 96 h (Xylene) (OECD Test Guideline 203)
Toxicity to algae	static test EC50 - Pseudokirchneriella subcapitata - 4.36 mg/l - 73 h (Xylene) (OECD Test Guideline 201)
Toxicity to bacteria	Remarks: (ECHA) (Xylene)

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned

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containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)
UN number: 1307 Class: 3 Packing group: III
Proper shipping name: Xylenes
Reportable Quantity (RQ): 125 lbs
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 1307 Class: 3 Packing group: III EMS-No: F-E, S-D
Proper shipping name: XYLENES

IATA
UN number: 1307 Class: 3 Packing group: III
Proper shipping name: Xylenes

SECTION 15: Regulatory information

US TSCA Section 3
This chemical/product is not and cannot be distributed in commerce (as defined in TSCA section 3(5)) or processed (as defined in TSCA section 3(13)) for consumer paint or coating removal.

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Xylene	1330-20-7	1993-04-24
ethylbenzene	100-41-4	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Reportable Quantity : F003 lbs

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Other regulations
No data available

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SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 8.5 Revision Date: 07/23/2022 Print Date: 10/08/2022

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ATTACHMENT B — TAILGATE SAFETY MEETING FORM

TAILGATE SAFETY MEETING

CHECK ONE: _____ Initial H&S Orientation _____Periodic "Toolbox" Safety Meeting

Project Site/Location_____

Date_____ Time_____ Job No._____

PM_____ PIC_____

The undersigned have attended a Health and Safety briefing, consisting of a review of the provisions of the Site Specific H&S Plan, and/or appropriate prior H&S events or concerns, and/or review of anticipated H&S concerns and safety measures for the project.

SUMMARY OF HEALTH AND SAFETY TOPICS COVERED (required topics are listed below to be covered in addition to regular site-specific topics)		
1. Pausing and Stopping Work		
2. Preparation for Natural Hazards (insects and ticks, poisonous plants)		
3. Uneven and/or Unstable Terrain in Work Area(s)		
4. How GZA People-Based Safety will be implemented on the site		
NAME (printed)	**SIGNATURE**	**COMPANY**

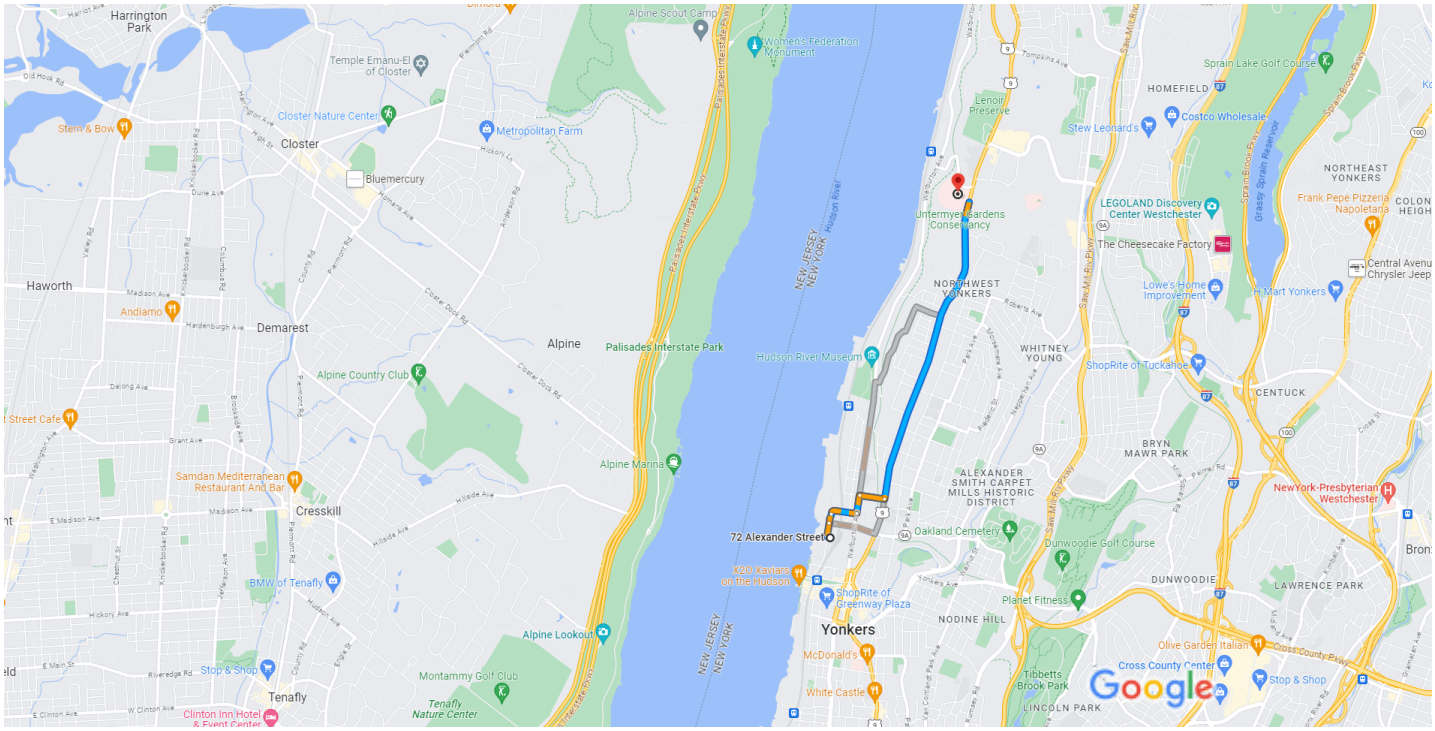
Conducted by: _____ Date:_____

ATTACHMENT C — ROUTE TO HOSPITAL

Google Maps

72 Alexander St, Yonkers, NY 10701 to St John's Riverside Hospital, 967 N Broadway, Yonkers, NY 10701

Drive 2.4 miles, 8 min



Map data ©2023 2000 ft

72 Alexander St
Yonkers, NY 10701

1. Head north on Alexander St toward Ashburton Ave — 443 ft
2. Continue onto Polychrome Pl — 302 ft
3. Continue onto Babcock Pl — 0.2 mi
4. Turn left onto Warburton Ave — 0.1 mi
5. Turn right onto Lamartine Ave — 0.2 mi
6. Turn left onto N Broadway — 1.9 mi

St John's Riverside Hospital
967 N Broadway, Yonkers, NY 10701

ATTACHMENT D — ACCIDENT AND INJURY REPORT FORM

SUPERVISOR'S ACCIDENT INVESTIGATION REPORT

Injured Employee _____ Job Title _____

Home Office _____ Division/Department _____

Date/Time of Accident _____

Location of Accident _____

Witnesses to the Accident _____

Injury Incurred? _____ Nature of Injury _____

_____

Engaged in What Task When Injured? _____

_____

Will Lost Time Occur? ____ How Long? _____ Date Lost Time Began _____

Were Other Persons Involved/Injured? _____

_____

How Did the Accident Occur? _____

_____

_____

_____

_____

What Could Be Done to Prevent Recurrence of the Accident? _____

_____

_____

What Actions Have You Taken Thus Far to Prevent Recurrence? _____

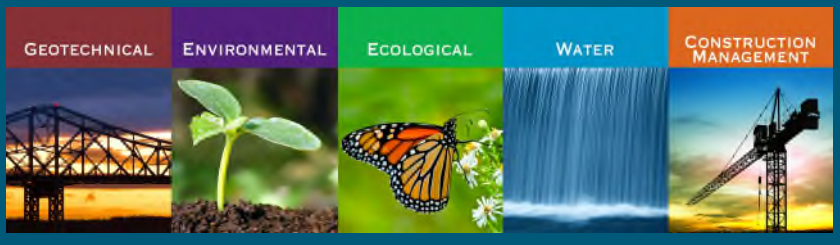
_____

_____

Supervisor's Signature _____ Title _____ Date _____

Reviewer's Signature _____ Title _____ Date _____

Note: If the space provided on this form is insufficient, provide additional information on a separate page and attach. The completed accident investigation report must be submitted to the Health and Safety Manager within two days of the occurrence of the accident.



GZA GeoEnvironmental of New York

APPENDIX H – COMMUNITY AIR MONITORING PLAN (CAMP)

Proactive by Design

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

GZA GeoEnvironmental of NY
104 West 29th Street
10th Floor
New York, NY 10001
T: 212.594.8140
F: 212.279.8180
www.gza.com

Appendix F
New York State Department of Health
Generic Community Air Monitoring Plan
Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. A periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

APPENDIX I – EXCAVATION WORK PLAN

I-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the site's cover system, the site owner or their representative will notify the NYSDEC contacts listed in the table below. **Table I-1** includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B.

Table I-1: Notifications*

Name	**Contact Information**
NYSDEC Project Manager: Ms. Michaela Cochran	518-402-9669 michaela.cochran@dec.ny.gov
NYSDEC DER Project Manager's Supervisor: Mr. Amen Omorogbe	(518) 402-9801 amen.omorogbe@dec.ny.gov
NYSDEC Site Control: Ms. Kelly Lewandowski:	(518) 402-9569 kelly.lewandowski@dec.ny.gov
NYSDOH Project Manager: Ms. Sarita Wagh	(518) 402-7860 sarita.wagh@health.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control.
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern,

potential presence of grossly contaminated media, and plans for any pre-construction sampling.

- A schedule for the work, detailing the start and completion of all intrusive work, and submittals (e.g., reports) to the NYSDEC documenting the completed intrusive work.
- A summary of the applicable components of this EWP.
- A statement that the work will be performed in compliance with this EWP, 29 CFR 1910.120 and 29 CFR 1926 Subpart P.
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of this SMP.
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

I-2 SOIL SCREENING METHODS

Visual, olfactory, and instrument-based (e.g. photoionization detector) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material

can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in **Section I-7** of this Appendix.

I-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

I-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site. A site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements). Trucks transporting contaminated soil must have either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides.

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

I-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are as follows: All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and considers: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site. Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development. Queuing of trucks will be performed on-site to minimize off-site disturbance. Off-site queuing will be prohibited.

I-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed off-site in a permitted facility in accordance with all local, State and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC project manager. Unregulated off-site management of materials from this site will not occur without formal NYSDEC project manager approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (e.g., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C&D debris recovery facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364 and 365. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

I-7 MATERIALS REUSE ON-SITE

The qualified environmental professional, as defined in 6 NYCRR Part 375, will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material (i.e., contaminated) does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within the cover system or within landscaping berms. Contaminated on-site material may only be used beneath the site cover as backfill for subsurface utility lines with prior approval from the DEC project manager.

Proposed materials for reuse on-site must be sampled for full suite analytical parameters including per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The sampling frequency will be in accordance with DER-10 Table 5.4(e)10 unless prior approval is obtained from the NYSDEC project manager for modification of the sampling frequency. The analytical results of soil/fill material testing must meet the site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances April 2023 guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event.

Soil/fill material for reuse on-site will be segregated and staged as described in **Sections I-2** and **I-3** of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of site excavation activities and proximity to nearby site features. Material reuse on-site will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 must be approved by the NYSDEC project manager.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

I-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported, and disposed off-site at a permitted facility in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream, or river) will be performed under a SPDES permit.

I-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Decision Document. The existing cover system is comprised of a minimum of 12 inches of a combination of sub-grade and top layer, including asphalt pavement, concrete covered sidewalks, and concrete building. The demarcation layer will be replaced to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated

SMP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

I-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, other environmental remediation sites, or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for industrial use. Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table B-2. Soils that meet 'general' fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including PFAS and 1, 4-dioxane. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

I-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

I-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. The NYSDEC project manager will be promptly notified of the discovery.

Sampling will be performed on product, sediment, and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes TAL metals, TCL volatiles and semi-volatiles (including 1,4-

dioxane), TCL pesticides and PCBs, and PFAS, unless the site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone within two hours to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

I-13 COMMUNITY AIR MONITORING PLAN

A figure showing the location of air sampling stations based on generally prevailing wind conditions is shown in **Figure I-1**. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

Figure I-1: Excavation Workplan CAMP Figure Monitoring Stations

I-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include limiting the area of open excavation. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils; If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of

chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

I-15 DUST CONTROL PLAN

Particulate monitoring must be conducted according to the Community Air Monitoring Plan (CAMP) provided in **Section I-13**. If particulate levels at the site exceed the thresholds listed in the CAMP or if airborne dust is observed on the site or leaving the site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production on the site.

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved using a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

I-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX J – QUALITY ASSURANCE PROJECT PLAN (QAPP)

Known for excellence.
Built on trust.

QUALITY ASSURANCE PROJECT PLAN

72 Alexander Street,
Block 2608, Lot 25
City of Yonkers, Westchester County, New York

August 21, 2023
File No. 12.0077558.00

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1.0 INTRODUCTION

GZA GeoEnvironmental (GZA) has developed this Quality Assurance Project Plan (QAPP) to establish the procedures for sample collection, analysis, and quality assurance for the Remedial Action (RA) and Site Management Plan (SMP) to be performed at 72 Alexander Street, City of Yonkers, Westchester County, New York (the Site). Sampling and analytical activities will be conducted in accordance with this QAPP, and the applicable requirements of the New York State Department of Environmental Conservation (NYSDEC).

1.1 PROJECT SCOPE

This QAPP describes field, analytical, and reporting standard operating procedures (SOPs) that will be utilized during the RA/SMP. The information and data collected will be utilized to assess the environmental conditions at the Site. These procedures generally apply to the following activities:

- Soil boring advancement
- Soil sample collection
- Groundwater monitoring well installation
- Monitor well gauging and sampling
- Soil gas sampling
- Laboratory analysis
- Report preparation

1.2 PROJECT OBJECTIVES

This QAPP was prepared to ensure that field sampling procedures, selected analytical methods, and chemical analytical data are of sufficient quality to meet the intended usage. As specific conditions and additional information warrant, this QAPP may be amended or revised to include Site-specific quality assurance/quality control (QA/QC) procedures. The information/data collected during the RA will be used to assist in the further delineation of known Site contamination and to evaluate the potential impact of areas of concern not previously investigated.

1.3 SAMPLE DESIGN AND RATIONALE

The RA sampling program has been designed to evaluate soil, soil gas, and groundwater conditions of the Site prior to redevelopment.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

A description of specific roles and responsibilities is provided below.

The Project Manager will be responsible for:

- Initiating project activities;

- Identifying project staff, equipment, and other resource requirements;
- Interfacing with client concerning technical matters and project progress;
- Monitoring task activities, and adjusting efforts or resources, as required to help ensure that established quality objectives are maintained;
- Internal project administration; and
- Oversight of report preparation.

The Field Team Leader/Site Supervisor will be responsible for:

- Supervising the technical performance of the project staff and field subcontractors;
- Ensuring compliance with the work plan;
- Coordinating data validation and quality assurance;
- Report preparation; and
- Working with the Project Manager in coordinating overall project quality assurance including preparation of work plans and review of data.

The field team will be comprised of various members of GZA staff based on their availability.

The Health and Safety Coordinator will be responsible for working with the Project Manager and Field Team Leader/Site Supervisor in formulation of a Site-specific Health and Safety Plan.

Quality Assurance will be accomplished through the GZA Consultant Reviewer project review process.

3.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

3.1 DATA QUALITY PROTOCOLS

New York State Department of Health Environmental Laboratory Accreditation Program (ELAP)-certified laboratories will provide analytical services for the Monitoring program. Groundwater and soil samples will be analyzed for one or more compound classes using the following analytical methods:

- TCL Volatile Organic Compounds (VOCs) by EPA Method 8260C/D
- Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270D
- TAL Metals by EPA Method 6010D
- Pesticides by EPA Method 8081B
- Polychlorinated Biphenyls (PCBs) by EPA Method 8082A
- 1,4-Dioxane by EPA Method 8270D
- Perfluorinated Alkyl Acids by EPA Method 537
- Soil gas samples will be analyzed for VOCs via EPA Method TO-15

Sample containers, preservation, holding times, and volumes will be in accordance with the particular EPA method.

3.2 ACCURACY

Accuracy is defined as the degree of agreement of a measurement or average of measurements with an accepted reference or true value. Accuracy will be evaluated by use of calibration and calibration verification procedures, laboratory control samples, and surrogate, matrix, and analytical spikes at the frequencies specified in **Section 4.5.** Not all accuracy checks are incorporated into each analytical method. Accuracy is defined as the degree of agreement of a measurement or average of measurements with an accepted reference or true value. Accuracy will be evaluated by use of calibration and calibration verification procedures, laboratory control samples, and surrogate, matrix, and analytical spikes at the frequencies specified in **Section 4.5**. Not all accuracy checks are incorporated into each analytical method.

3.3 PRECISION

Precision is defined as a measure of mutual agreement among individual measurements of the sample property. Precision will be evaluated by the analysis of laboratory and matrix spike duplicate samples at the rate specified in **Section 4.5**. We will also collect 5% duplicate samples in the field for comparison purposes.

3.4 DATA REPRESENTATIVENESS

Samples will be collected in a standardized manner designed to produce representative samples. This QAPP and the RA are designed so that the samples collected will present an accurate representation of actual Site conditions.

3.5 DATA COMPARABILITY

Data comparability will be ensured by control of sample collection methodology, analytical methodology, and data reporting and by the usage of USEPA-approved methodologies. The QAPP and sampling methodologies are designed so that comparability questions are minimized. Standardized sampling techniques and analytical methods will be used to attain stated project objectives. The required level of laboratory deliverables will maximize comparability of analytical results.

3.6 DATA COMPLETENESS

The number of samples to be collected is based on the need for data completeness. Data gaps will be addressed when/if they occur by systematic re-sampling and/or increasing the number of sampling points.

4.0 SAMPLING PROCEDURES

Environmental sampling will include groundwater sampling, soil sampling, and soil gas sampling. Additionally, wastes generated during well installation and development will be sampled and tested for characterization for disposal, as needed. Groundwater samples will be collected using bladder pumps, submersible pumps or bailers. Grab or composite sampling using appropriate hand-held sampling equipment will be the preferred method for waste characterization sampling.

4.1 SOIL SAMPLING (DIRECT PUSH DRILLING)

Sampling will be performed using four- or five-foot-long acetate sleeves that will be advanced continuously to the desired depth below the surface. Soil samples from each sleeve will be screened using a photoionization detector (PID) calibrated to 100 parts per million (ppm) isobutylene, to detect possible organic vapors. Organic vapor screening will be performed by slicing open the acetate sleeve, making a small slice in the soil column with a clean knife or sampling tool, inserting the PID probe and pushing the slice closed, and monitoring the soil for approximately 5 to 10 seconds. This procedure will be repeated at intervals along the soil column at the field geologist's discretion.

The samples will be examined for staining, discoloration, odors, and debris indicative of contamination (ash, coal fragments, wood chips, cinders, petroleum staining, etc.) Samples for laboratory analysis will be collected from the six-inch interval most likely to be contaminated, based on PID readings, discoloration, staining, and the field geologist's judgment (field conditions may require a section longer than six inches to make sufficient sample; however, this decision will be field-based).

The samples will be collected by cutting the soil in two places with a decontaminated steel, stainless steel, or aluminum trowel, spoon, or knife and homogenized in a decontaminated stainless-steel pan before being placed in the sample bottles. Samples collected for analysis for VOCs and total organic halides will be placed directly into the sample containers without homogenization (as per EPA sampling method 5035A). Samplers will wear phthalate-free gloves such as nitrile (no latex will be used) and will avoid contact of the gloves with the sample. Only clean metal instruments will be allowed to touch the sample. If there is insufficient soil volume in the spoon, then this will be made up by attempting a second direct push sleeve at the same depth, or by using the next immediate sample interval above or below this depth, if appropriate. If there is no recovery, then the sample depth will be skipped, and drilling will progress to the next depth interval.

Soil samples will be collected in laboratory provided containers and transported to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory, under chain-of-custody procedures for analysis. Once the sample containers are filled, they will be immediately placed in the cooler with ice (in Ziploc plastic bags to prevent leaking) or synthetic ice packs to maintain the samples at below 4^{o}C.

Details of sampling procedures for the emerging contaminants 1,4-dioxane and per- and poly-fluoroalkyl substances (PFAS) are provided in Attachment A.

4.2 SOIL SAMPLING (HOLLOW-STEM AUGER)

Soil samples will be collected utilizing 2-inch-diameter by 2-foot-long split spoon samplers driven ahead of a hollow stem auger. Three-inch-diameter split spoon samplers may also be used. Augers with a minimum inside diameter of 4¼ inches will be used for drilling where wells are proposed. If soil sampling below the groundwater table is required, augers will be equipped with center plugs and/or inert "knock out" plates to control sub-water table sediments from rising inside the auger flights and hampering collection of representative soil samples.

Each split spoon sample will be screened using a PID to detect possible organic vapors. Organic vapor screening will be performed by opening the split spoon, making a small slice in the soil column with a clean knife or sampling tool, inserting the PID probe and pushing the slice closed, and monitoring the soil for approximately 5 to 10 seconds. This procedure will be repeated at intervals along the split spoon soil column at the field geologist's discretion.

The split spoons will be examined for staining, discoloration, odors, and debris indicative of contamination (ash, coal fragments, wood chips, cinders, petroleum staining, etc.). One sample will be collected from the designated six-inch

interval as per the accompanying workplan. Note that due to sample recovery or field conditions, sample intervals other than six inches may be necessary to collect sufficient sample. Additionally, sample intervals other than those designated in the accompanying workplan may be selected based on field conditions.

The samples will be collected by cutting the soil in two places with a decontaminated steel, stainless steel, or aluminum trowel, spoon, or knife and homogenizing in a decontaminated stainless-steel pan before being placed in the sample bottles. Samples collected for analysis for VOCs and total organic halides samples will be placed directly into the sample containers without homogenization. Samplers will wear phthalate-free gloves such as nitrile (no latex will be used) and will avoid contact of the gloves with the sample. Only clean metal instruments will be allowed to touch the sample. If there is no recovery, then the sample depth will be skipped, and drilling will progress to the next sampling interval.

Soil samples will be collected in laboratory provided containers and transported to a NYSDOH ELAP certified laboratory, under proper chain of custody procedures for analysis. Once the sample containers are filled, they will be immediately placed in the cooler with ice (in Ziploc plastic bags to prevent leaking) or synthetic ice packs to maintain the samples at below 4°C.

Details of sampling procedures for the emerging contaminants 1,4-dioxane and per- and poly-fluoroalkyl substances (PFAS) are provided in Attachment A.

4.3 GROUNDWATER SAMPLING (PERMANENT WELL)

Groundwater sampling of permanent monitoring wells is described according to the following distinct phases of this work: well installation/construction, well development, well purging, and well sampling.

4.3.1 Well Installation/Construction

Groundwater monitoring wells will be constructed of threaded two-inch diameter PVC well casing and 10-slot well screen. Clean silica sand (No. 1 sand) will be placed in the annular space around the well to a minimum of one foot above the top of the well screen, two feet being optimal. Solid PVC riser, attached to the well screen, will extend to grade or above if the well is a stick-up. For a two-inch diameter well, the annular space for the filter pack should be between 2 to 4 inches thick. (The 4 ¼ inside diameter hollow stem augers will be retracted as the filter pack is installed to yield the required annular space.) A two-foot thick bentonite seal will be placed above the sand pack and moistened with potable water for a minimum of 15 minutes before backfilling the remaining space with a cement-bentonite grout. If warranted by depth, filling will be completed using a tremie pipe placed below the surface of the grout. A stick-up or flush-mount protective casing with a locking well cap will be installed, and a measuring point marked on each PVC well riser. Soils will be logged utilizing a modified Bermister classification system. Boring logs/well construction diagrams will be prepared for each well.

4.3.2 Well Development

Following installation, the groundwater monitoring wells will be developed using a two-inch diameter submersible pump(s) (or equivalent) until the water is reasonably free of turbidity. Fifty nephelometric turbidity units (NTUs) or less will be the turbidity goal but not an absolute value. The wells will be developed aggressively to remove fines from the formation and sand pack. The wells will be allowed to equilibrate prior to sampling. The volume of water removed, the well development time, and field instrument readings will be recorded in the field logbook.

4.3.3 Low-Flow Well Sampling

Upon opening each monitoring well, the headspace will be measured using PID calibrated to 100 ppm isobutylene, and water level measurements will be recorded using an electronic water level meter or oil-water interface probe, as appropriate. The depth to product (if present), depth to water, and the total depth will be measured from the top of the marked PVC casings to an accuracy of 0.01 feet. Before sampling, the wells will be purged utilizing a low-flow submersible stainless-steel pump with dedicated polyethylene tubing connected to a transparent flow cell. Very low purging rates are proposed, on the order of 100 ml/minute to 500 ml/minute, to minimize suspension of particulate matter in the well.

Groundwater from each well will be purged until turbidity, pH, temperature, dissolved oxygen, and specific conductivity have stabilized. As practical, all field measurements will be taken from the flow cell and will be recorded in the field logbook during and after purging, and before sampling.

Purging will be performed with the pump intake placed at the midpoint of the well screen or the midpoint of the water column (to be determined based on the depth and length of the screen interval) to ensure that all stagnant water in the well is removed, while not stirring up sediment that may have accumulated on the bottom of the well. Equipment will be lowered into the well very carefully to prevent suspension of bottom sediment and subsequent entrainment onto sampling equipment. Surging will be avoided. Dedicated tubing will be used for each well. Pumps will be carefully cleaned between wells according to the procedures specified in **Section 4.7.** Ideally, pumping rates will be at a rate so that no drawdown of the groundwater level occurs (i.e., pumping rate is less than recharge rate). During purging, the sampler will actively monitor and track the volume of water purged and the field parameter readings. Data will be recorded in the field logbook or well purge data sheet. Sampling personnel will wear phthalate-free gloves such as nitrile (no latex will be used) and will avoid contact of the gloves with the sample. Only clean instruments will be allowed to touch the sample.

Per- and poly-fluoroalkyl substances (PFAS), if analyzed, are to be sampled first. PFAS are very stable manmade chemicals that have properties that allow them to repel both water and oil. The water repelling properties of these substances allow them to be applied to almost any material to make it water, oil, and stain repellant. These properties were first used commercially in the 1950s, and they are used in a wide variety of consumer products, including carpets, clothing, non-stick pans, paints, polishes, waxes, cleaning products, and food packaging. Firefighters and the military use them in fire-suppressing foam. Based upon its usage it is important to prevent cross-contamination while collecting groundwater samples for PFAS analysis. A detailed sampling procedure is discussed in Attachment A. The PFAS samples should be kept in a separate and dedicated cooler and should not be placed with the other sample containers.

1, 4 Dioxane analysis: Collect groundwater samples and pour it slowly into two of the 250 ml Amber Glass vials with Teflon Lined caps.

The samples will be collected in laboratory prepared sample bottles (pre-preserved, if appropriate), placed in iced coolers, and removed from light immediately after collection. In addition, all sample bottles must be filled to the top so that no aeration of the samples occurs during transport. All bottles will be filled to avoid cascading and aeration of the samples, the goal being to minimize any precipitation of colloidal matter.

4.4 SOIL GAS SAMPLING

4.4.1 Soil Gas Sampling (Direct Push)

A direct-drive rig will be utilized to drive rods with a decontaminated stainless-steel probe through six-mil plastic sheeting to the desired sample depth, which will be approximately 1.5 feet above the capillary fringe. The soil gas probe will then be purged at a flow rate not greater than 0.2 liters/minute to evacuate one to three volumes using a photoionization detector (PID) with an integrated vacuum pump (PhotoVac 2020 or appropriate alternate). Following the stabilization period, each probe will be connected to an evacuated laboratory-supplied SUMMA® canister. SUMMA® canisters are passivated stainless steel vessels that have been cleaned and certified contaminant-free by the contract laboratory. Each SUMMA® canister will be shipped to the sampling site under a high vacuum (30" Hg) to ensure that the canister remains free of contaminants prior to use. After connecting the SUMMA® canister to the soil gas probe, a regulator valve on the canister will be opened and the vacuum will slowly draw the sample into the canister over a period of two hours. The samples will not be drawn at greater than 0.2 liters per minute. Quantitation limits for all analytes range between 1.6 ppbV and 4.0 ppbV, depending on the compound. After collecting the soil gas sample, the valve will be closed and disconnected from the soil gas probe. The soil-gas samples will be shipped overnight to a New York ELAP certified laboratory for TO-15 analysis.

A tracer gas (e.g., helium, butane, or sulfur hexafluoride) will be utilized prior to sample collection to evaluate the potential for infiltration of outdoor air into the sample. Subsequent rounds of soil gas sampling would include the use of tracer gas only if the initial round of sampling indicates that outdoor air has the potential to influence soil gas sample results.

When soil vapor samples are collected, the following conditions that may influence the interpretation of results will be documented:

- Identification of any nearby commercial or industrial buildings that likely uses volatile organic compounds;
- A sketch of the Site, showing streets, neighboring commercial or industrial facilities (with estimated distances to the Site, and soil-gas sampling locations);
- Weather conditions (e.g., precipitation, outdoor temperature, barometric pressure, wind speed and direction); and
- Any pertinent observations, such as odors or readings from field instrumentation.

4.5 FIELD DATA COLLECTION

Data to be collected in the field may include:

- Groundwater level and/or free product level measurements via electronic water level indicator, oil/water interface probe, and or pressure-based water level data loggers;
- Pumping rates (calculated based on gallons pumped in a measured time);
- Water quality parameters including temperature, pH, oxidation-reduction potential, dissolved oxygen, specific conductivity, turbidity, etc. via water quality field meter; and,
- Volatile organic compound screening for soils and well headspace via PID.

Field data will be recorded in the field logbook, boring log forms and/or well purge datasheets.

4.6 QC SAMPLE COLLECTION

QC samples may include equipment rinsate/field blanks, trip blanks, sample duplicates and matrix spike/matrix spike duplicates (MS/MSDs).

Equipment Rinsate/Field Blanks will be used to check for potential contamination from ambient air and/or field sampling equipment. Equipment rinsate/field blanks will be collected in the field by pouring laboratory-supplied deionized water over/through decontaminated sampling equipment prior to sample collection. Equipment rinsate/field blanks will be submitted to the laboratory at a frequency of one per 20 soil samples. For groundwater samples, an equipment/rinsate blank will be collected for each sampling day when more than one groundwater sample is collected. Equipment rinsate/field blank analytical parameters will match sample analytical parameters. Equipment rinsate/field blanks will not be collected for samples associated with waste disposal.

Trip Blanks will be used to assess the potential for volatile organic compound contamination of groundwater samples due to contaminant migration during sample shipment and storage. Trip blanks will consist of laboratory-supplied deionized water. Trip blanks are never opened and travel to and from the Site with the empty and full sample bottles. Trip blanks are stored with the investigative samples and kept closed until analyzed by the laboratory. Trip blanks will be submitted to the laboratory at a frequency of one per cooler that contains groundwater samples for VOC analysis only.

Sample Duplicates are an additional aliquot of the same sample submitted for the same parameters as the original sample. Sample duplicates will be used to assess sampling and analytical reproducibility. Duplicate samples consist of an actual sample taken in the field that has been split into two identical aliquots and put into two separate sampling containers. Each duplicate of a soil sample (except for the VOC fraction) will be homogenized in a dedicated stainless-steel pan prior to alternately filling the sample containers. The volatile fraction for soils will be collected directly from the sampling device without homogenization. Sample duplicates will be analyzed as two separate samples and submitted at a frequency of one per 20 samples for all matrices and all parameters with the exception of parameters collected for waste characterization purposes.

MSs and MSDs are two additional aliquots of the same sample submitted for the same parameters as the original sample. However, the additional aliquots are spiked with the compounds of concern. Matrix spikes provide information about the effect of the sample matrix on the measurement methodology. MS/MSDs samples will be selected by the laboratory at a frequency of one per 20 investigative samples per matrix for organic parameters. MSs will be submitted at a frequency of one per 20 investigative samples per matrix for inorganic parameters.

4.7 SAMPLE PRESERVATION AND CONTAINERIZATION

The analytical laboratory will supply the sample containers for the applicable samples. These containers will be cleaned by the manufacturer to meet or exceed all analyte specifications established in the latest U.S. EPA's *Specifications and Guidance for Contaminant-Free Sample Containers*. The containers will be pre-preserved, as required by the analytical method.

4.8 EQUIPMENT DECONTAMINATION

Re-usable Teflon®, Stainless steel, and aluminum sampling equipment will be cleaned between each use in the following manner:

- Wash/scrub with a biodegradable degreaser ("Simple Green") if there is oily residue on equipment surface;

- Tap water rinse;
- Wash and scrub with Alconox and water mixture;
- Tap water rinse;
- 10 percent HNO_3 rinse for non-dedicated, stainless steel groundwater sampling equipment for metals analysis only (excludes submersible pump and flow cell) and 1 percent HNO_3 rinse for non-dedicated, non-stainless steel equipment;
- Hexane rinse (optional, only if required to remove heavy petroleum coating);
- Distilled/deionized water rinse; and,
- Air dry.

Cleaned equipment will be wrapped in aluminum foil if not used immediately after air-drying.

Groundwater sampling pumps (whale pumps) will be cleaned by washing and scrubbing with an Alconox/water mixture, rinsing with tap water and irrigating with distilled/deionized water.

Bladder pumps will utilize dedicated bladders, o-rings, and grab plates. Bladder pumps will be cleaned by taking apart the pump and washing and scrubbing with an Alconox/water mixture, rinsing with tap water and irrigating with distilled/deionized water. Once the pump is clean, new dedicated parts (bladder, o-rings, and grab plate) will be installed.

Disposable, dedicated equipment (e.g. bailers, tubing, etc.) will be used to the extent possible.

5.0 DOCUMENTATION AND CHAIN-OF-CUSTODY

5.1 SAMPLE COLLECTION DOCUMENTATION

5.1.1 Field Data Documentation/Field Logs

A system of logging pertinent data collected during sampling operations will be maintained using bound field logbooks. Each page will be numbered, dated, and initialed or signed by the person making the entry. Entries will be made in ink. Errors will be crossed out with a single line, initialed, and dated. At the completion of the day, if a page is not complete, a diagonal line will be drawn through the remainder of the page with the signature at the bottom.

Sample locations will be recorded and referenced to the Site map so that each location is permanently established. Samples will be tagged or labeled with pertinent Site information at the time of sampling. **Section 5.1.3** describes sample identification. Pertinent Site information to be supplied in the field log for each task is listed below:

- Initials or Signature of note taker
- Name and location of investigation
- Date and time of arrival and departure
- Names of all personnel on-Site and their affiliation

- Purpose of the visit
- Field instruments used, date and time of calibration and calibration checks, method of calibration, standards used
- Field measurement results
- Date, time, and location of all sampling points
- Method of sample collection
- Factors that could affect sample integrity
- Name of sampler(s)
- Sample identification and sample description
- Documentation of conversations with the client, regulatory personnel, field decisions, and approval
- Sample locations intervals
- Weather conditions
- Inventory of drum contents and storage location for each drum of waste material generated.

Field notebooks should contain only factual information entered as real-time notes, which will enable the user to recreate events on-Site. Drilling/boring logs and monitoring well construction details will be recorded in the field notebook and/or on a separate boring log/well construction form for each boring/monitoring well. Soil descriptions will be based on a modified Burmister soil classification system, where minor components and relative soil density will not be specified. Strata not sampled will be so indicated. Groundwater sampling field data will be recorded in the field notebook and/or on separate purge data sheet for each monitoring well sampled.

5.1.2 Chain-of-Custody Records

Sample custody is discussed in detail in **Sections 5.1.4 through 5.1.6** of this Plan. Chain-of-custody records are initiated by the samplers in the field. The field portion of the custody documentation should include: (1) the project name; (2) signature(s) of sampler(s); (3) the sample number, date and time of collection, and whether the sample is grab or composite; and (4) if applicable, air bill or other shipping number. Sample receipt and log-in procedures at the laboratory are described in **Section 5.1.6** of this Plan.

Samples will be transferred to the custody of the respective laboratories via third-party commercial carriers or via laboratory courier service within timeframes required by NJDEP field sampling procedures.

5.1.3 Sample Labeling

Immediately upon collection, each sample will be labeled with an adhesive label, which includes the date and time of collection, sampler's initials, tests to be performed, preservative (if applicable), and a unique identifier. The following identification scheme will be used:

A. The sample ID number will include the soil, soil gas, sediment, wastewater, or monitoring well location, along with the sample depth, sample interval, and the depth interval at which it was collected.

Example:

Sample P-9(5-5.5') indicates the sample was taken at boring location P-9, from the 6-inch interval in the spoon beginning at 5.0 feet below grade and ending at 5.5 feet below grade.

Duplicate samples will be labeled as blind duplicates by giving them sample numbers indistinguishable from a normal sample.

Blanks should be spelled out and identify the associated matrix, e.g., Field Blank

MS/MSDs will be noted in the Comments column of the COC.

B. The analysis required will be indicated for each sample.

Example: SVOC

C. Date taken will be the date the sample was collected, using the format: MM-DD-YY.

Example: 03-22-12

D. Time will be the time the sample was collected, using military time.

Example: 14:30

E. The sampler's name will be printed in the "Sampled By" section.

F. Other information relevant to the sample.

Example: Equipment Blank

A sample label will contain the following information:

Job No.

Client

Sample Number

Date/Sample Time

Sample Matrix

Grab or Composite (explain)

Preservatives

Analyses

Sampler Signature

An example sample label is presented below:

Job No: XXXXXXXXX

Client: Name

Sample No: OU1-B22(5-5.5')

Matrix: Soil
Date Taken: 3/22/12

Time Taken: 14:30

Sampler: B. Smith

Analysis: SVOC

This sample label contains the authoritative information for the sample. Inconsistencies with other documents will be settled in favor of the vial or container label unless otherwise corrected in writing from the field personnel collecting samples.

5.1.4 Sample Custody

A sample is considered to be under a person's custody if:

- The item is in the actual possession of the person;
- The item is in the view of the person after being in actual possession of the person;
- The item was in the actual physical possession of the person but is locked up to prevent tampering; or,
- The item is in a designated and identified secure area.

5.1.5 Field Custody Procedures

Samples will be collected following the sampling procedures documented in **Section 4.00** of this Plan. Documentation of sample collection is described in **Section 5.1.1** of this Plan. Sample chain-of-custody and packaging procedures are summarized below. These procedures are intended to ensure that the samples will arrive at the laboratory with the chain-of-custody intact.

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or dispatched properly. Field procedures have been designed such that as few people as possible will handle the samples.
- All bottles will be identified by the use of sample labels with sample numbers, sampling locations, date/time of collection, and type of analysis. The sample labeling system is presented in **Section 5.1.3** of this Plan.
- Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample label because the pen would not function in wet weather.

- Samples will be accompanied by a properly completed chain-of-custody form. The sample numbers and locations will be listed on the chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents the transfer of custody of samples from the sampler to another person, to the analytical laboratory courier, or to/from a secure storage location.
- All shipments will be accompanied by the chain-of-custody record identifying the contents. The original record will accompany the shipment, and copies will be retained by the sampler and placed in the project files.
- Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and/or secured to the inside top of each sample box or cooler. If using a commercial carrier service to ship sample containers to the laboratory, the containers will be secured with strapping tape and custody seals. The custody seals will be attached to the front right and back left of the cooler and covered with clear plastic tape after being signed by field personnel. The cooler will be strapped shut with strapping tape in at least two locations.
- If the samples are sent by commercial carrier, the air bill will be used. Air bills will be retained as part of the permanent documentation. Commercial carriers are not required to sign off on the custody forms since the custody forms will be sealed inside the sample cooler and the custody seals will remain intact.

Samples remain in the custody of the sampler until transfer of custody is completed. This consists of delivery of samples to the laboratory sample custodian or laboratory courier, and signature of the laboratory sample custodian or courier on the chain-of-custody document as receiving the samples and signature of sampler as relinquishing samples.

5.1.6 Laboratory Custody Procedures

Samples will be received and logged in by a designated sample custodian or his/her designee. Upon sample receipt, the sample custodian will:

- Examine the shipping containers to verify that the custody tape is intact, if applicable;
- Examine all sample containers for damage;
- Determine if the temperature required for the requested testing program has been maintained during shipment and document the temperature on the chain-of-custody records;
- Compare samples received against those listed on the chain-of-custody;
- Verify that sample holding times have not been exceeded;
- Examine all shipping records for accuracy and completeness;
- Determine sample pH (if applicable) and record on chain-of-custody form;
- Sign and date the chain-of-custody immediately (if shipment is accepted) and attach the air bill;
- Note any problems associated with the coolers and/or samples on the cooler receipt form and notify the Laboratory Project Manager, who will be responsible for contacting GZA;
- Attach laboratory sample container labels with unique laboratory identification and test; and,
- Place the samples in the proper laboratory storage.

Following receipt, samples will be logged in according to the following procedure:

- The samples will be entered into the laboratory tracking system. At a minimum, the following information will be entered: project name or identification, unique sample numbers (both client and internal laboratory), type of sample, required tests, date and time of laboratory receipt of samples, and field ID provided by field personnel.
- The Laboratory Project Manager will be notified of sample arrival.

The completed chain-of-custody, air bills, and any additional documentation will be placed in the final evidence file.

5.2 SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

No field analyses are anticipated for this program. If site conditions were to warrant field analysis, the responsible contractor will prepare an addendum establishing the field analytical procedures. Analyses of all samples will be performed by NYSDOH ELAP certified laboratories.

5.3 SAMPLE PRESERVATION

5.3.1 Soil Samples

Samples collected for non-VOC analyses will be collected in 4-oz amber glass containers. VOC samples will be collected in 5g EnCore® Samplers. All samples will be placed immediately in the sample cooler to be maintained at 4°C.

5.3.2 Groundwater Samples

Samples collected for non-VOC analyses will be collected in 1000-ml amber glass containers or 250-ml plastic containers. VOC samples will be collected in 40-ml VOA vials. All samples will be placed immediately in the sample cooler to be maintained at 4°C.

5.4 INVESTIGATION-DERIVED WASTE

Drill cuttings and purged well water will be containerized in DOT-approved or equivalent 55-gallon drums and stored on-Site pending analysis and proper off-Site disposal.

6.0 CALIBRATION/ANALYTICAL PROCEDURES

6.1 LABORATORY CALIBRATION

Calibration procedures for a specific laboratory instrument will consist of initial calibrations, initial calibration verifications, and/or continuing calibration verification. Detailed descriptions of the calibration procedures for a specific laboratory instrument are included in the laboratory's standard operating procedures (SOPs), which describe the calibration procedures, their frequency, acceptance criteria, and the conditions that will require recalibration. These procedures are as required in the respective analytical methodologies. The initial calibration associated with all analyses must contain a low-level calibration standard which is less than or equal to the quantitation limit.

6.2 LABORATORY PREVENTATIVE MAINTENANCE

Preventative maintenance and periodic maintenance will be performed as needed and documented in laboratory notebooks, instrument maintenance logbooks, or work orders as appropriate in accordance with method-specific requirements.

PID screening instruments will be calibrated daily prior to field activities according to the instrument manufacturer's specifications using certified calibration gases. Sampling personnel shall perform battery checks daily. The recorded calibration information includes date of calibration, standards used, and calibration results.

6.3 FIELD PREVENTATIVE MAINTENANCE

Field instruments will be checked prior to use in the field according to the procedures and frequencies specified by the manufacturer. GZA utilizes a commercial instrument rental company (e.g. Pine Environmental or US Environmental) to provide field instrumentation. Records of factory calibrations and instrument maintenance will be maintained by the instrument rental company. Field maintenance will be performed as needed and recorded in the field logbook.

7.0 DATA VALIDATION AND REPORTING

Laboratory deliverables will include, at a minimum:

1. A cover page, including facility name and address, laboratory name and address, laboratory certification number, date of analytical report preparation, and signature of laboratory director.
2. A contents page.
3. A non-conformance summary
3. A listing of all field sample identification numbers and corresponding laboratory sample identification numbers
3. A listing of the analytical methods used
4. Detection limits for each analyte
5. Tabulated sample results, including date of analysis
6. Method blank results
7. Chain-of-custody documents
8. Temperature of sample at receipt

GEOTECHNICAL
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WATER
CONSTRUCTION MANAGEMENT

APPENDIX K – SITE MANAGEMENT FORMS

Note: NYSDEC to provide the Certification Forms once the SMP has been accepted.

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